12-1-2011

Response to Autism: An Assessment of Services for Students with Autism in Kentucky's Public Schools

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RESPONSE TO AUTISM: AN ASSESSMENT OF SERVICES FOR STUDENTS WITH AUTISM IN KENTUCKY'S PUBLIC SCHOOLS

A Dissertation
Presented to
The Faculty of the Educational Leadership Doctoral Program
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education

By
Leigh Anne Roden
December 2011

RESPONSE TO AUTISM: AN ASSESSMENT OF SERVICES FOR STUDENTS WITH AUTISM IN KENTUCKY'S PUBLIC SCHOOLS

Date Recommended 11.07.2011

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I dedicate this dissertation first to every family member, service provider, educator, and child who has been touched by autism. The indescribable joy that these exceptional children have brought to my life is without equal and my life work will continue to be dedicated to them. Special children like Grant, Henry, and Christopher serve as continual reminders of why I chose to be a speech-language pathologist and why the field of speech-language pathology chose me.

Second, I dedicate this dissertation to my parents, William Roden and Elaine Marcello, whose love and support is without equal. They instilled in me the value of not only getting an education, but more importantly, the value of using education to better the lives of others.

ACKNOWLEDGMENTS

First and foremost, I express my gratitude to those individuals who guided me through this process. My dissertation chair, Dr. Chris Wagner, who provided both professional and personal guidance, helped me to accomplish my dreams. His support and friendship are irreplaceable. I can only hope that I will someday become at least half the exemplary leader he is. I would also like to thank Dr. Jie Zhang for assisting me with the methodological aspects of this study. I sincerely thank Dr. Patti Whetstone and Dr. Jerry Ralston for contributing an abundance of professional and content knowledge with every draft I submitted. Each of these committee members spent countless hours reviewing and editing this dissertation.

The companionship and support of my special cohort friends, Lauren Martin and Tim Gott, helped me to survive this process. From the first day, I knew that I would share a special bond with these two amazing individuals and I know that our friendship is lifelong. I also deeply treasure all friends from Cohort III and am thankful that we were able to share such a special journey. My Hiseville and Park City friends, my high school friends, and my WKU CD friends provided constant words of love and encouragement. Finally, special thanks to my best friends – Cassie and Laura – who were always there to celebrate every accomplishment - both educationally and personally - along the way.

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Directed by: Christopher Wagner, Jie Zhang, Patti Whetstone, and Jerry Ralston

Educational Leadership Doctoral Program Western Kentucky University

The full implementation of school-based autism services has grown in importance over the past few decades. School systems are expected to provide high-quality educational services for students with autism spectrum disorders. Though several organizations provide recommendations for appropriate program components, Kentucky does not supply education agencies with a means of evaluating the current autism services offered within their districts and schools.

This descriptive study examined the current level of implementation of school-based autism services within an educational cooperative in Kentucky. The research was conducted to determine whether or not school districts are fully implementing essential program components as recommended by the National Professional Development Center on Autism Spectrum Disorders. Directors of special education and district autism team members from 17 school districts in an educational cooperative completed the Autism Program Quality Indicators and provided an implementation level rating for 14 essential program components. Responses from each group were compared to establish consistency between respondent groups. An overall rating score was assigned to each school district.

Quantitative data demonstrated that, on average, directors of special education reported higher levels of implementation than district autism members. However, the

educational cooperative as a whole showed little variability between respondent groups, which indicated consistency in ratings. A comparison of the means for indicators by districts revealed areas of concern were not consistently distributed across school districts. Lower rating scores for indicators by district were disseminated throughout the educational cooperative. Lower rated program components included Community Collaboration, Family Involvement and Support, Curriculum, and Program Evaluation. Finally, the research revealed 75% of school districts included in the sample provided school-based autism programming that indicated sufficient evidence for quality services with most, but not all, students with autism.

CHAPTER I: STATEMENT OF THE PROBLEM

Introduction

Whether due to an increase in awareness or an increase in identification, autism was originally thought to affect 1 in every 150 births (Centers for Disease Control and Prevention, 2002). However, recent information from the Centers for Disease Control and Prevention (CDC) indicates that number is actually closer to 1 in 110 (CDC, 2009). According to a report by the United States Government Accountability Office (USGAO), the number of students diagnosed with autism and served under the Individuals with Disabilities Education Act increased by over 500% between 1995 and 2005 (USGAO, 2005) and is becoming one of the fastest growing developmental delays in the world.

The dramatic increase in number of children with autism has had an impact on the educational system as the main intervention provided for this population (National Research Council, 2001). The Individuals with Disabilities Education Act of 1990 (IDEA) recognized autism spectrum disorders as a disability category, therefore schools must provide special education services to eligible students (IDEA, 1990). More and more children are entering school with an autism diagnosis and, because of the variability in the manifestation of the disorder, service providers are called to provide specific and individualized instruction for each child (Yell, Katsiyannis, Drasgow, & Herbst, 2003; Freeman, 1997; National Research Council, 2001; Schwartz, Sandall, McBride, & Boulware, 2004). The rise in numbers calls attention to the financial implications for educational agencies (Mandlawitz, 2002). The cost of caring for a person with autism over the course of his/her lifetime is estimated at $3.2 million dollars (Ganz, 2007).

Nationally, for the fiscal year 1999-2000, the average per pupil expenditure for a

student in regular education was $7,463 (National Center for Education Statistics, 2003). The estimated cost for educating a student with autism for that same school year was approximately $11,543 (Chambers, Shkolnik, & Perez, 2003). Research also indicates a vast growth in the autism rates in school districts. For the 2009-2010 school year, Kentucky reported 3,535 students with autism ages 3-21 (Kentucky Department of Education, 2010a) and from 1992 to 2009 there has been a 6,569.81% increase in the number of students with autism in Kentucky (Kentucky Department of Education, 2010b). The increase in the number of students with autism being served in the public schools and the cost for serviced provided to these unique children has caused growing concerns with the provision of educational services to students with autism (USGAO, 2005).

Autism Spectrum Disorders Background

Autism is a neurological delay characterized by impairments or atypical development in social interaction, communication, and behaviors or activities and is included in the Diagnostic and Statistical Manual-Fourth Edition-Text Revision as a Pervasive Developmental Disorder (PDD) (American Psychiatric Association, [DSM-IV-TR], 2000). The category of PDD is considered an umbrella of disorders, which includes autism, Asperger's syndrome, pervasive developmental disorder–not otherwise specified, childhood disintegrative disorder, and Rett syndrome. Autism is defined as a spectrum disorder meaning that children presenting with characteristics can range from high-functioning to low-functioning or mild to severe. Diagnosis of autism usually includes the utilization of a multidisciplinary team that conducts clinical observations in conjunction with standardized assessments. Symptoms are usually present before age

three (National Institute of Health, 2010) and research indicates that children are being diagnosed at earlier ages than in the past (Centers for Disease Control and Prevention, 2009). Although the exact cause of this developmental delay is unknown, a combination of genetic, social and environmental factors is thought to contribute to the manifestation of autism.

Autism prevalence has grown significantly over the past decade (Magyar, 2011) with no known cause for the increase in rates over time (Newschaffer, Falb, & Gurney, 2005). Possible increases in the prevalence of autism have been attributed to more awareness of the disorder among service professionals and parents, revisions to the diagnostic criteria, and expansion of the 'spectrum' (Wing & Potter, 2002). Schools have experienced an increase in the number of students labeled with autism as a result of the creation of autism as a recognized disability category.

The 1990 Amendment to the Individuals with Disabilities Education Act (IDEA) (Public Law 101-476) added autism as a disability category thus requiring educational agencies to provide services for this unique population. From the 1991-1992 school year to the 2000-2001 school year, the Office of Special Education Programs reported a 1,354.3% increase in the number of students ages 6 through 21 served in the nation's schools under the IDEA disability category of autism (United States Department of Education, 2002). However, Safran (2008) predicted that "there potentially remain tens of thousands of public school students yet to be identified with autism" (p. 94).

The Problem: Challenges for the Public School System

The intent of school-based autism services is to provide high-quality interventions to students with autism in accordance with IDEA. The provision of high-quality services

may be contingent upon several variables including the number of students with autism needing services and the percent of free/reduced lunch students within the district (indicating the school's socioeconomic status) (Durkin et al., 2010). Other factors also include parental involvement, teacher experience, and severity of the disability (Bitterman, Daley, Misra, Carlson, & Markowitz, 2008). The Individuals with Disabilities Education Improvement Act of 2004 (IDEIA) requires that services for all students with disabilities be delivered in the least restrictive environment, provide students with highly qualified educators, encourage educational rights, and support the idea of individualized education planning (IDEIA, 2004).

Challenges faced by the educational system concerning students with autism include the dramatic increase in students entering the school with autism spectrum disorders, the high costs of interventions, meeting the varying needs of children from one end of the spectrum to the other, and high rates of litigation (Muller, 2006). Mandlawitz (2002) identified other challenges such as qualified personnel shortages, competition among interventions, parental desire for specific interventions, and due process demands. Another challenge for school districts is delineating between a medical diagnosis and an educational diagnosis of autism. More concerning is that not one particular treatment approach has been shown to be effective with all children; rather, an assortment of services is often warranted (Bitterman et al., 2008) and there is not an established consistency among the requirements of state educational agencies in regards to diagnostic criteria (Dahle, 2003). Stahmer and Mandell (2007) found that there was variability among states and a lack of clear policies and practices for students with autism (p. 33). What schools perceive as a lack of direction from national, state, and local educational

agencies emerges as a challenge for the educational community as a whole. This apparent deficiency in regulation impacts the delivery of educational services for children with autism at the national, state, district, and school levels.

Provision of services. Before receiving services in the educational system, a child must be evaluated using a "variety of assessment tools" (IDEA, 2004, Part B, Sec. 614, Evaluations, Parental Consent and Reevaluations, Evaluation Procedures). Though the educational diagnosis criteria vary from state to state (Dahle, 2003) most require that the child must present with deficits in communication, social interaction, and demonstrate repetitive behaviors or interests. It is also possible for a child to receive a clinical diagnosis of autism yet still not be eligible to receive special education services. Furthermore, it is possible for a student to be deemed eligible for special education services as a student under the disability category of autism without a clinical diagnosis. Differences between educational and clinical diagnosis criteria can result in confusion among professionals in regards to service provision (Dahle, 2003) and "may lead to disagreement among the experts regarding the specific services to be provided" (Mandlawitz, 2002, p. 500).

Students with autism often receive a wide variety of services in the school system. Services are provided from a variety of disciplines which may include, but are not limited to, speech therapy, physical therapy, social skills training, occupational therapy, sensory therapy, counseling, behavioral therapy, and vision therapy. Treatments can include applied behavior analysis, discrete trial training, pivotal response training, and dietary modifications. According to a study conducted by Bitterman and colleagues (2008), students with autism typically received an average of 19.5 hours per week with a mean of

5.4 different types of services provided while Kohler (2008) reported an average of 6.44 different types of services. Intensity of services is individualized and based on the needs of the student and the severity of the delay. IDEIA also requires the use of scientifically evidenced-based practices for all students with disabilities (IDEIA, 2004).

Location of the delivery of services to students with autism is dictated by IDEA (2004). According to the law, educational agencies are required to provide services to all students with disabilities in the least restrictive environment. The concept of the least restrictive environment is discussed in the law under Part B, Section 612(a) (5) (A):

> To the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities, are educated with children who are not disabled, and special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only when the nature or severity of the disability of a child is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily. (20 U.S.C. 1412 § (a)(5)(A))

In Kentucky, individualized education plans (IEPs) state the choices for least restrictive environment as the student spending: a) more than 80% of the day in regular programs, b) 40-80% of the day in regular programs, or c) less than 40% of the day in regular programs. Other options for the least restrictive environment include separate school, residential facility, homebound/hospital, correctional facility, or separate school by parental placement.

The law further stipulates that services are to be provided in the least restrictive environment by highly-qualified educators, which was a new requirement set forth in

IDEIA of 2004. The term 'highly qualified' means that the educator has obtained at least a bachelor's degree as well as state certification and/or licensure (IDEIA, 2004). IDEA also states that personnel must be "appropriately and adequately prepared and trained, including that those personnel have the content knowledge and skills to serve children with disabilities" (20 U.S.C. 1412 § (a)(14)(A)).

The National Professional Development Center on Autism Spectrum Disorders (NPDC on ASD, 2008) released nine guiding principles to direct the implementation of high-quality educationally-based supports and services for students with autism spectrum disorders. These nine principles include understanding autism spectrum disorders, providing family-centered practices that honor diversity, collaborating as an interdisciplinary team, using evidence based practices, using data collection to guide intervention, providing services in natural and least restrictive environments, providing access to the curriculum and community, planning for transitions, and embracing a systems approach (NPDC on ASD, 2008, "Introduction", para. 2).

As evidenced by the research, state and local education agencies are faced with an increased number of students with autism in public school classrooms and federal laws requiring appropriate services delivered by highly qualified personnel. School systems already provide educational services to students with autism; therefore the effective and efficient assessment of autism services will supply educational agencies with information needed to make decisions concerning the provision of school-based autism services.

Assessment of services. The Education for All Handicapped Children Act of 1975 mandated that schools complete program planning and service delivery assessments (Education for All Handicapped Children Act, 1975). However, federal mandates and

the increased demand from stakeholders to provide "improved educational opportunities have resulted in the growing acknowledgement that an appropriate education for children with autism has not been ensured by simple compliance monitoring of various special education regulations" (Oren & Ogletree, 2000, p. 170). This implies that a more comprehensive assessment of services for students with autism is warranted. As stated by Hess, Morrier, Heflin, and Ivey (2007):

> The increase in the number of students with ASD along with the explosion in the quantity of ineffective interventions converge to create a critical need to examine the nature, type, and frequency of educational services provided to students with ASD enrolled in public schools. (p. 961)

This assessment of services included those provided directly to the student and program components such as personnel training, collaboration among service providers, individualized education planning, parental involvement, etc. An examination of a combination of components provides a comprehensive picture of school-based autism services.

Components of autism assessment instruments are derived from reviews of the literature and input from autism spectrum disorder experts, parents, service providers, national representatives and other important stakeholders. Though each assessment tool is structured differently, a comparison of the tools demonstrates recurring themes (see Table 1 for a comparison of four states' autism program quality indicators evaluation instruments). Program components included on several of the assessment tools are necessary to provide a comprehensive picture of school-based autism services. Recurring program components from assessment tools include collaboration among professionals,

personnel knowledge and training, individualized education plan development, individual assessment/evaluation, curriculum components and implementation, behavior management, structuring of environment, monitoring of student outcomes, transition, inclusive practices, family and community involvement, and the use of program assessments.

The Commonwealth of Kentucky has not developed an assessment tool that provides information on the evaluation of the current provision of school-based autism services in the Commonwealth. In 2006, the Kentucky Commission on Autism Spectrum Disorders released fifteen recommendations for the state to follow regarding autism services. Those recommendations for the school system included, but were not limited to, teaming with the Kentucky Department of Education (KDE) to synchronize services for students in public schools, the hiring of "qualified staff", development of training programs, and providing extended school day and school year services without having to prove child regression for students with autism (Kentucky Council on Developmental Disabilities, 2008).

The Kentucky Department of Education also issued the Technical Assistance Manual on Autism for Kentucky Schools in November of 1997. The manual included sixteen enhancements for supporting students with autism: participation and engagement, time for completion, pace of instruction, size of task, instructional input, output of responses, level of difficulty, physical environment and materials, level of support, organization of information, location of learning, motivation for student performance, social interaction, behavior, alternate goals and parallel curriculum. The manual also stresses that "there are specific environment supports that should be

considered and addressed for any student with autism," (KDE, 1997, p. 35).

Some states have developed state-specific assessment tools through review of the literature and input from stakeholders in the education of students with autism spectrum disorders. Since Kentucky does not have an autism program assessment tool, school districts are not currently required to submit data regarding the degree of program component implementation. Without this information, it is difficult for state and local education agencies to determine appropriate professional development activities or provide school districts with remedies for autism program and/or service components that are not fully or appropriately implemented with all students with autism. There is a gap in the research concerning assessments of school-based autism programs/services in Kentucky as no current data exists to address this pressing matter.

Purpose of the Study

The present study examined the current level of implementation of school-based services for students with autism spectrum disorders in Kentucky public schools. Program components/services were rated by directors of special education and district autism team representatives. According to the Centers for Disease Control and Prevention (2009) the growing number of students entering the public schools with a diagnosis of autism and characteristics of autism has caused public schools to play a significant role in the evaluation, provision of services, and, at times, the identification of this unique population. An increase in pressure on the public schools to provide high-quality services to students with autism has increased the demand for program evaluation (Oren & Ogletree, 2000). Due to the requirements set forth by IDEIA (2004), school systems already provide special education and related services to meet the educational

Table 1

Comparison of Selected State Autism Program Evaluation Tools

	Program evaluation tool			
Program component	APQI (New York)	APQI (New Jersey)	LAQI	APQI (Colorado)
Individual evaluation	X	X		X
Development of the IEP	X	X	X	X
Curriculum	X	X	X	X
Instructional activities	X	X	X	X
Instructional methods	X	X	X	X
Instructional environments	X	X	X	X
Review and monitoring of progress and outcomes	X	X	X	X
Family involvement and support	X	X	X	X
Inclusion	X	X	X	
Planning the move from one setting to another (Transition)	X	X	X	X
Challenging behavior	X	X	X	X
Community collaboration	X	X		X
Personnel	X	X	X	
Program evaluation	X	X	X	
Program characteristics	X	X		
Communication	X	X	X	X
Social development	X	X	X	X

Note. APQI = Autism Program Quality Indicators; LAQI = Louisiana Autism Quality Indicators. Adapted from: "Autism Program Quality Indicators. A Self-Review and Quality Improvement Guide for Schools and Programs Serving Students with Autism Spectrum Disorders," by University of the State of New York, 2001. Copyright 2001 by the New York State Education Department; "New Jersey Department of Education Autism Program Quality Indicators," by New Jersey Department of Education, 2004. Copyright 2004 by New Jersey Department of Education Office of Special Programs; "Louisiana Autism Quality Indicators for Schools," by Louisiana State University Human Development Center, 2008. Copyright by the Louisiana State University Human

Development Center; "Autism Program Quality Indicators," 2010. Copyright 2010 by the Colorado Department of Education.

needs of students with autism spectrum disorders. However, no evaluation data is available that addresses school-based autism programs/services in Kentucky.

To date, no study has examined the level of program component/service implementation for the education of students with autism spectrum disorders aged 3-21 in Kentucky public schools. It is important to evaluate the school-based autism services/programs in order to determine strengths and areas needing improvement based on national recommendations. Due to this lack of data for school-based autism service/program evaluation, the purpose of this study was to utilize the New York State Autism Program Quality Indicators evaluation tool to assess school-based autism services provided by public schools in Kentucky. The fourteen indicators included on the Autism Program Quality Indicators evaluation tool include individual education, development of the individual education program (IEP), curriculum, instructional activities, instructional methods, instructional environments, review and monitoring of progress and outcomes, family involvement and support, inclusion, planning the move from one setting to another, challenging behavior, community collaboration, personnel, and program evaluation (University of the State of New York, 2001). This study: (a) assessed the current level of implementation of school-based autism services/programs for students with autism spectrum disorders as rated by the Autism Program Quality Indicators evaluation tool, and (b) investigated whether or not consistent strengths and weaknesses are present across school districts.

This study specifically focused on autism programs in the 17 public school districts comprising an educational cooperative in Kentucky and those indicators

addressed by the Autism Program Quality Indicators evaluation tool. The outcomes for students with autism spectrum disorders were not addressed by this study, nor were the effectiveness of program components examined. The information for this study will serve to provide each school district with an assessment of programs for students with autism spectrum disorders. Concerns with the provision of services for students with autism led to the central research question for this study: Based on the Autism Program Quality Indicators evaluation tool, what is the extent of program implementation for autism services in Kentucky public schools?

Research Questions

The purpose of this study was: (a) to assess the current level of service implementation for students with autism spectrum disorders as rated by directors of special education and district autism team members using the Autism Program Quality Indicators evaluation tool, and (b) to identify strengths and weaknesses (if any) that existed in the implementation of school-based autism services. Ratings were obtained from the director of special education from each school district included in this study as well as district autism team representatives from each district. Acquiring this information from the directors of special education services for students with autism and members of the district autism teams provided a clear picture of services and programs for this population. Results of the evaluation tool yielded data demonstrating the extent of service implementation for the fourteen indicators of school-based autism services in Kentucky.

The research questions for this study are as follows:

1. What is the current level of service implementation for students with autism

spectrum disorders based on the Autism Program Quality Indicators evaluation tool as reported by public school directors of special education and district autism team representatives in an educational region in Kentucky?

2. Do strengths and weaknesses in program implementation exist that are consistent across school districts?

Significance of the Study

The study examined the current level of service implementation for students with autism spectrum disorders in the public school setting in select Kentucky districts. Various studies and reports exist which provided recommendations for specific components of autism programs (Hurth, Shaw, Izeman, Whaley, & Rogers, 1999; National Research Council, 2001; National Early Childhood Technical Assistance Center, 2011); however, there was no available assessment of school-based autism programs/services for Kentucky schools. The research study is significant for a number of reasons.

First, knowledge of the current assessment of school-based services for students with autism will provide district-level decision makers (specifically directors of special education) and building level staff (specifically principals, special education teachers, and related service providers) with the information needed to determine the extent of service implementation of various program components. Second, following the determination of the extent of service implementation of program components, school districts can then delineate between fully, partially, or non-implemented components. Future professional development activities and action plans derived from the results of this study will ensure that school districts are fully implementing recommended services for students with

autism spectrum disorders.

The Autism Program Quality Indicators evaluation tool was completed by district-level administrators (directors of special education) and building-level staff (special education teachers, related services providers). Completion by different district staff allowed for a comparison between the ratings of directors and the ratings of teachers. Consistency of responses was examined.

Finally, results of this study will raise awareness of school-based autism services in Kentucky and provide insight to various stakeholders (students, parents, administrators, policy makers, etc.) concerning service implementation. Due to the increase in number of students with autism in Kentucky's public schools (Kentucky Department of Education, 2010b) it is important to provide this information to stakeholders to increase supports for the growing needs of this population being serviced in classrooms across the Commonwealth.

Limitations of the Study

The purpose of this study is to: (a) assess the current level of implementation of school-based services for students with autism spectrum disorders as rated by the Autism Program Quality Indicators evaluation tool, and (b) to identify strengths and weaknesses (if any) in the implementation of school-based autism services. There are several limitations to this research due to the specific location of data collection, sample size, and the specific program components and variables studied. As articulated by Oren and Ogletree (2000), "Program evaluations are generally conducted for two reasons: (a) to provide information on program processes to improve program quality, and (b) to provide information on student outcomes to assist in determining a child's progress" (p. 170).

First, this research does not examine student outcomes. The evaluation of student progress would involve a more comprehensive study utilizing both quantitative and qualitative methods such as the use of standardized assessments of students, observations, and interviews conducted over time. This study is limited in scope because it only examines the extent of service implementation for students with autism spectrum disorders in the public schools.

The sample size chosen for participation in this research study is relatively small, which is another constraint of the study. The educational cooperative is comprised of 17 school districts, which has implications for the power of the results of the study and limits the generalizability of the findings.

An arguable limitation of this study is a possible over-diagnosis of children with autism in the United States. This study does not examine whether or not students being serviced in the public schools are appropriately identified with autism but rather focuses on the extent of service implementation of services available to students with this diagnosis.

Finally, because directors of special education and district representatives from the district autism team are the participants, there is the possibility that results are biased because participants know that their responses are to be compared to other school districts in the educational cooperative. However, bias is minimized by the fact that more than one perspective will be obtained.

Summary

Since the Centers for Disease Control and Prevention reported that an astounding 1 in every 110 children is affected by an autism spectrum disorder (CDC, 2009), there

has been an increased interest in the provision of services within the context of the public schools. There is a definite increase in the number of students with autism attending public school and requiring services as mandated by IDEIA. This apparent surge in the number of children with autism across the United States has impacted both state and local education agencies. Schools districts are feeling the pressure, not only financially, but also providing personnel, resources, and services. Education is intended to be the main source of intervention for students with autism (National Research Council, 2001) and school systems must deliver appropriate, effective, and efficient services.

The demand on the American public educational system is to provide high-quality services for all students with autism as mandated by IDEIA and suggested by such governmental agencies as the National Research Council and the NPDC on ASD. Students with autism require individualized instruction from highly qualified educators that are specifically trained in autism spectrum disorders. Students also require a wide array of services, as the disorder manifests differently in each child potentially impacting communication, behavior, academic, and social development.

Though IDEA mandated school systems to provide a free and appropriate public education to students with autism, there is no guidance in the law to assist states in designing and fully implementing school-based autism services appropriately (IDEIA, 2004). As indicated in the research, policies and practices concerning the education of students with autism vary from state to state (Stahmer & Mandell, 2007) allowing states to develop their own assessment tools to evaluate autism services.

To address the need for direction, the NPDC on ASD released nine guiding principles to assist educational agencies in ensuring high-quality school-based autism

programs and services (NPDC on ASD, 2008). These principles cover major program components that are addressed in existing assessment instruments such as the Autism Program Quality Indicators developed by the New York State Education Department (2001). Included in school-based autism program assessment tools are collaboration among professionals, personnel knowledge and training, individualized education plan development, individual assessment/evaluation, curriculum components and implementation, behavior management, structuring of environment, monitoring of student outcomes, transition, inclusive practices, family and community involvement, and the use of program assessments (see Table 1). The effectiveness and quality of school-based autism services are based on the evidence of program components (Magyar, 2011).

To date, no study was available that assessed school-based autism services in the Commonwealth of Kentucky which provided information on the extent of service and/or program implementation. Because of the growing number of students with autism, the unique needs of this population, financial implications, mandates from state and federal law, and parental concerns, it is imperative that school districts assess the current state of school-based autism services to determine strengths of program implementation and to identify areas needing improvement. This work is a descriptive evaluation study addressing the extent of program implementation as reported by directors of special education and district autism team members to obtain a comprehensive picture of the current state of school-based autism services in an educational cooperative in Kentucky.

CHAPTER II: REVIEW OF THE LITERATURE

Introduction

Autism has become one of the most recognized developmental disorders in the world. The increase in the prevalence of the disorder as well as the varying needs of this population has called attention to the fact that persons with autism spectrum disorders need individualized and specialized treatment in order to be successful members of society. Autism is currently being utilized as a diagnosis label for one out of every 110 individuals (Centers for Disease Control and Prevention, 2009). The rise in the number of children with autism spectrum disorders has increased the amount of pressure placed on public school systems in regards to appropriate and effective provision of services and has increased the demand for program evaluation (Oren & Ogletree, 2000).

The Individuals with Disabilities Education Improvement Act (IDEIA, 2004) requires state and local educational agencies to provide special education services to students with diagnoses of autism spectrum disorders. The law stipulates that individualized instruction must be provided in the least restrictive environment by highly qualified educators (IDEIA, 2004). The No Child Left Behind Act of 2001 also required the provision of instruction from highly qualified educators. The law further guided school districts to ensure that all students achieve high levels of academic success in reading and mathematics. The act stated that all school districts must use evidenced-based instructional practices and interventions in the education of students with disabilities.

In response to the rise in number of students with autism, more stringent regulations at the federal level, and the increased demand for high-quality services, the

National Professional Development Center on Autism Spectrum Disorders (NPDC on ASD) published nine guiding principles to assist school districts in developing effective programming for students with autism spectrum disorders. The National Research Council also provided a comprehensive document regarding provision of services in the educational setting. Several research studies have identified core elements for autism programs (Hurth et al., 1999; Iovannone, Dunlap, Huber, & Kincaid, 2003; Dawson & Osterling, 1997) to assist school districts and other agencies with effective program structure. In 1997 the Kentucky Department of Education developed the Technical Assistance Manual on Autism for Kentucky Schools to provide guidance in developing educationally appropriate services for students with autism spectrum disorders (Kentucky Department of Education, 1997).

Although literature exists that identifies elements of and recommendations for effective school-based autism programs, school districts continue to struggle with meeting the needs of students with autism. Program improvement is the purpose of program evaluation (Oren & Ogletree, 2000) and can state and local education agencies in determining strengths and areas of concern for school-based autism services. The purpose of this literature review provided a brief history of autism spectrum disorders and examined the laws and regulations governing provision of services; information concerning recommended components of school-based autism programs is also discussed. Finally, this literature review examines the Autism Program Quality Indicators assessment tool as developed by the New York State Education Department.

Historical Background

Dr. Leo Kanner is the Austrian pediatrician most often referenced as the founder

of autism (NPDC on ASD, 2008). In a 1943 publication, "Autistic disturbances of affective contact," Kanner described children who were socially withdrawn, needed routines, and engaged in repetitive behaviors. At the same time, Austrian pediatrician and child psychologist Hans Asperger began to describe children with "autistic psychopathy." Asperger's work focused on children who were socially awkward with limited emotional connectedness but sufficient language skills. Like Kanner, Asperger mentioned the stereotypic behaviors and unusual interests of the children studied. From Asperger's work the combination of these characteristics later became known as Asperger's syndrome, which is part of the autism disorders spectrum.

The predominant theory regarding the cause of autism was that of the 'refrigerator mother.' Mentioned by Dr. Kanner (1943) in his early writings and supported by observations of children with autism and their parents, he stated, "There are very few really warmhearted fathers and mothers. . . . The question arises whether or to what extent this fact has contributed to the condition of the children," (p. 250). Dr. Bruno Bettelheim, a professor of psychology from the University of Chicago, labeled and popularized the "refrigerator mother" theory based on his extremely limited experience with children with autism and on Kanner's observations (Jepson and Johnson, 2007). Bettelheim believed that mothers of children with autism did not show them love, lacked intimacy and affection towards their children, and would defend themselves against their children (Bettelheim, 1967). Bettelheim (1967) wrote in his book *The Empty Fortress:*

> In those children destined to become autistic their oversensitivity to the mother's emotions may be such that they try, in defense, to blot out what is too destructive an experience for them. Little is known about the relation between the

development of the child's feelings and his cognition. But to blot out emotional experience probably impedes the development of cognition, and it may be that the two reinforce each other till autism results. (p. 398)

In the 1960s, autism was considered a mental disorder (Bettelheim, 1967), not a developmental disorder. Dr. Bernard Rimland, an American psychologist, was the first to publish materials to suggest that biological factors were the cause of autism, not parenting (Rimland, 1964). He contended that signs of autism were noted from birth and occurred more often in males than females (Rimland, 1964). His publications pushed the field of autism in a completely different direction regarding the etiology of the developmental disorder.

Over the past fifty years since Kanner first described the characteristics of children with autism, advances in scientific and genetic research have sought to identify the exact cause of the disorder. Various prenatal and perinatal factors, such as uterine bleeding, have been linked to higher rates of autism in some children (Juul-Dam, Townsend, & Courchesne, 2001). Environmental factors, such as assorted teratogens, have also been shown to increase the chances of having a child with autism (London & Etzel, 2000). Current research is also attempting to map the autism genome sequence via the Autism Genome Project (Autism Genome Project, 2009). Sousa et al. (2010) found common genetic variations in two brain proteins, LRRN3 and LRRTM3, in children diagnosed with autism. Ronald et al. (2006), when conducting studies using identical twins, found genetic heterogeneity among all three of the major components of autism. Bailey et al. (1995) found that, when given a strict autism diagnosis, 60% of identical twins were diagnosed with autism versus 0% of fraternal twins. Under the umbrella of

autism spectrum disorders, Rett Syndrome is currently the only ASD for which a particular genetic component has been identified to confirm the diagnosis.

Creation of Autism Label

Prior to the popularized use of autism as a diagnosis label, many individuals were misdiagnosed with various other disorders including schizophrenia, depression, general mental disabilities and other psychiatric disorders (Tsakanikos et al., 2005). Institutionalization was often the prescribed treatment method and children were rarely afforded the opportunity to attend public schools. In 1990 the Individuals with Disabilities Education Act added autism as a disability category. Children who had previously been labeled as functionally and mentally disabled, mild mentally disabled, emotionally disturbed, or other health impaired were now placed into the appropriate disability category of autism. A study by Coo et al. (2008) attributed a 51.9% increase in autism prevalence to diagnostic substitution.

Definition of Autism Spectrum Disorders

Diagnosis Criteria

Autism is diagnosed based on observations of a child in which there are difficulties in social interaction and communication and the demonstration of repetitive or stereotypical behaviors. The current Diagnostic and Statistical Manual of Mental Disorders-IV Text Revision (American Psychiatric Association, [DSM-IV-TR], 2000) provides the diagnosis criteria for autism (see Figure 1).

The diagnosis can be made by a pediatrician, school or clinical psychologist, psychiatrist, or neurologist (Aspy & Grossman, 2007). A diagnosis is usually made following observations and interactions with the child, interviews with parents, and

completion of an evaluation tool or checklist. Several evaluation tools include, but are not limited to, the Autism Treatment Evaluation Checklist (Rimland & Edelson, 1999), Childhood Autism Rating Scale (Schopler, Reichler, & Renner, 1993), Gilliam Autism Rating Scale Second Edition (Gilliam, 2006), Gilliam Asperger's Disorder Scale (Gilliam, 2000), Autism Diagnostic Interview-Revised (Rutter, LeCouteur, & Lord, 2003), Autism Behavior Checklist (Krug, Arick & Almond, 2008), and The Modified Checklist for Autism in Toddlers (Robins, Fein, & Barton, 1999).

Children with autism often exhibit delays in three areas of development: communication, social interaction/relationships, and display restricted, repetitive behaviors or interests (Hurth et al., 1999; American Psychiatric Association, [DSM-IV-TR], 2000). Communication characteristics of children with autism can vary greatly but often include difficulty communicating symbolically the basic wants and needs (Greenspan & Wieder, 1997). A receptive language delay may also be present where the child has difficulty understanding information. Individuals with autism often present with some language abilities but are not able to use their language skills to appropriately interact with others. Echolalic speech is sometimes a stereotypical of behavior of children with ASD where they repeat what is heard but do not use the language in a functional way. Volkmar, Paul, Klin, and Cohen (2005) identified several prelinguistic and linguistic behaviors that are common among students with autism: depressed rate of preverbal communicative acts, delayed development of pointing gestures, using nonconventional means of communication, reduced responsiveness to speech and hearing, restricted range of communicative behaviors, atypical preverbal vocalizations, deficits in pretend and imaginative play, limited ability to imitate, echolalia, difficulty

Figure 1. Diagnosis Criteria for Autism Spectrum Disorders

Six or more items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):

1. qualitative impairment in social interaction, as manifested by at least two of the following:
   a. marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
   b. failure to develop peer relationships appropriate to developmental level
   c. a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)
   d. lack of social or emotional reciprocity
2. qualitative impairments in communication as manifested by at least one of the following:
   a. delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)
   b. in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others
   c. stereotyped and repetitive use of language or idiosyncratic language
   d. lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level
3. restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:
   a. encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
   b. apparently inflexible adherence to specific, nonfunctional routines or rituals
   c. stereotyped and repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements)
   d. persistent preoccupation with parts of objects

B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.

C. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder.

Note. Adapted from: "The Diagnostic and Statistical Manual of Mental Disorders-IV Text Revision," 2000, by the American Psychiatric Association. Copyright 2000 by American Psychiatric Association.

with pronouns, unusual word use, and difficulties with pragmatic/social communication skills (pp. 799-800, pp. 804-805).

Pragmatic communication skills (often referred to as social language/skills or social aspects) are often delayed (Greenspan & Wieder, 1997; Hurth et al., 1999). Students with ASD may be unable to engage in appropriate conversations with others or maintain conversational topics, avoid making eye contact, or not understand body language or proxemics. Another common social characteristic of individuals with autism is failure to develop relationships with appropriate peers (American Psychiatric Association, [DSM-IV-TR], 2000). The inability to understand the emotions of others or express one's emotions may be a trait exhibited by individuals with autism (Hill, Berthoz, & Frith, 2004). A final social characteristic is that he/she may show deficits in the ability to share interests or activities with others, also known as joint attention (Landa, 2007).

Academically and cognitively, individuals with autism can have a wide-range of abilities. There has been research to suggest a definite link between attention and autism (Janzen, 2003); students may lose attention easily, get lost in minor details, or simply not be able to focus to facilitate task completion. Generalization may be difficult as well (Plaisted, O'Riordan, & Baron-Cohen, 1998); what is taught in one setting may not generalize to another setting thus warranting repeat instruction. Academic activities which require problem solving may be challenging as students with autism sometimes struggle with abstract ideas or concepts (Greenspan & Wieder, 1997) and may not be able to think with flexibility (Hill, 2004).

There are a variety of behavioral characteristics that an individual with autism may exhibit. From being quiet and reserved to having extreme screaming fits, the

behavior of children with autism varies like the spectrum on which they have been placed. Students may engage in repetitive or stereotypic behaviors (American Psychiatric Association, [DSM-IV-TR], 2000) such as hand-flapping, spinning of objects, lining up toys, or smelling things; individuals sometimes have fascinations with parts of objects. Behaviors are often attributed to sensory overload or sensory deficits. The child may also need sameness and be resistant to schedule changes. Finally, individuals with autism may have an intense interest in unusual topics or ideas (i.e. dinosaurs, cars, fans) (American Psychiatric Association, [DSM-IV-TR], 2000).

Sensory processing is another area of concern for children with autism (Baker et al., 2009). As mentioned previously, some students have difficulty due to a lack of sensory input and others are sensitive to excessive sensory input. Auditory sensitivity is often mentioned as a major sensory dysfunction. Sensory integration can cause difficulty processing various forms of sensory input at one given time. Sensory processing difficulties are another sign of autism (Baker, Lane, Angley, & Young, 2009, p. 114).

In summary, a diagnosis of autism is given when a student presents with delays in communication, social interaction, and demonstrates repetitive or stereotypical behaviors (American Psychiatric Association, [DSM-IV-TR], 2000). The characteristics of autism can vary from student to student thus making it increasingly difficult and inappropriate to provide one specific type of intervention to all students. Education is intended to be the main intervention for students with autism spectrum disorders (National Research Council, 2001); therefore, the importance of effective and efficient school-based interventions is clear.

Education of Students with Autism Spectrum Disorders

The growing number of students with autism serviced in the public school systems has resulted in more stringent laws and regulations enacted by federal and state governments to ensure the appropriate education of all students with special needs. Public Law 94.142 (now known as the Individuals with Disabilities Education Improvement Act) was the first to address the responsibilities of educational agencies regarding the education of students identified as having special needs.

Individuals with Disabilities Education Act (Formally Public Law 94.142)

Though not a case specific to the education of children with special needs, *Brown v. Board of Education* was the first lawsuit to demand equal treatment of all children in the public school system. The decision in the *Brown* case amplified the public's desire for comparable educational rights for all children-including those with special needs. The Education for All Handicapped Children Act (also known as Public Law 94.142) was enacted by Congress in 1975 as a result of an altruistic push from the general public to support students with special needs in American school systems. The law was created because children with special needs were not being serviced correctly in the public schools and were denied the services that provided them with equal opportunity. Public Law 94.142 was also fueled by two previous cases: *Mills v. Board of Education of District of Columbia* (1972) and *Pennsylvania Association of Retarded Children (PARC) v. Commonwealth* (1971). *Mills* resulted in the District of Columbia Board of Education granting children with special needs a free and appropriate public education, an individualized education program, and due process procedures (Alexander & Alexander, 2008). The *PARC* decision also provided for a free, public education with appropriate supports for children with special needs (Yell, Rogers, & Rogers, 1998). With the *Mills*

and *PARC* decisions serving as templates, the EAHCA was written, enacted, and school districts were immediately required to meet the needs of all students with special needs and to enhance services for those students with extensive needs.

The importance of empirical-based research in the field of special education (20 U.S.C. 1416 § (e)(1)(A)(ii)) and the improvement of opportunities for students with special needs was the focus of a 1978 amendment to EAHCA. States were again reminded about the importance of providing adequate services for children in special education. A 1983 amendment expanded services to students who were deaf and/or blind (20 U.S.C. 1401 § (3)(A)(i)) and redefined "special education" as services needed to meet the *educational* needs of all children with special needs (20 U.S.C. 1414 § (b)(3)(C)). In the Handicapped Children's Protection Act of 1986 amendment Congress expanded services to preschool children aged three to five and established services for birth to age two. This amendment also focused on the increased provision of specialized services for students with extensive special needs as well as children who were deaf and/or blind.

The EAHCA was formally renamed the Individuals with Disabilities Education Act (IDEA) in 1990 and this amendment included services for children with traumatic brain injury. The transition to adulthood was addressed by requiring inclusion on all individualized education programs for students aged sixteen and older. The 1990 amendment was widely known for adding autism as an eligibility category demanding states to provide services for those students with an autism diagnosis. The law was further refined in 1997 to allow school districts an extended age range in identifying a student's specific disability (Alexander & Alexander, 2008).

IDEIA includes 13 disability categories: other health impaired, multiple

disabilities, mentally retarded, hard of hearing, deaf, speech and/or language impaired, visually impaired, blind, emotionally or behaviorally disturbed, orthopedically impaired, autism, traumatic brain injury, and specific learning disability. The category of developmental delay was also created to allow students to be placed in special education (without a specific diagnosis) due to significant delays in social/emotional, communicative, physical, cognitive, or adaptive development (20 U.S.C. 1432 § (4)(C)(v)).

The amendment to the law further addressed concerns with the discipline of students with special needs stating that students cannot be suspended for longer than ten days; if the suspension lasts longer than this time period, students must be placed in an alternative setting. While deciding the appropriate discipline for the student, he/she must continue to be provided with a free and appropriate public education. The right to a free and appropriate public education was modified to include all students aged three to twenty-one (20 U.S.C. 1412 § (a)(1)(A)).

The most recent amendment to IDEA came in 2004 and retitled the law the Individuals with Disabilities Education Improvement Act (IDEIA). The main revisions in 2004 reflected the provision of stimulus funds to school districts to provide services to students in private schools. The term "highly qualified teacher" was new language included in the amendment meaning that teachers of students with special education must possess a state certification, license, and bachelor's degree in order to provide instruction. The use of alternate assessments ensured the inclusion of all students in state and district accountability systems and the measure of adequate yearly progress as defined by the No Child Left Behind Act. Other issues such as due process hearing procedures, discipline,

and identification of students with learning disabilities were also addressed. Finally, federal funding for special education was modified to allow for 15% of the funds to be utilized for regular education initiatives such as response to intervention (20 U.S.C. 1413 § (a)(4)(A)(ii)).

Weishaar, Borsa, and Weishaar (2007) summarized the seven IDEIA building blocks: child find/zero reject, nondiscriminatory assessment, individual education program, least restrictive environment, parental participation, procedural due process, and right to educational achievement. Relative to students with autism, zero reject states that no student with a disability can be excluded from a public school, regardless of the severity of the disability. Some students with autism have extensive needs and this provision protects their right to receive a free and appropriate public education no matter where they fall on the spectrum. Child find is a program that requires school districts to actively seek out children that may require services from the schools. The program positively impacts children who may have characteristics of autism or an actual diagnosis because the child find process helps to get them into the schools as early as possible to receive services.

Development of the individual education program (IEP) is vital for students with autism. Autism spectrum disorders include a broad spectrum of abilities and needs for each unique students. By providing every student with autism an individual education plan, he/she is given the opportunity to receive the services that are specific to ability level and needs. The least restrictive environment is another building block, which speaks to the individualized needs of the child. Not all students with autism can spend 100% of the instructional day in the regular education classroom. The least restrictive

environment requires that students access the general education classroom and curriculum for as much time as deemed appropriate for the student. Intense sensory needs or behavioral concerns can cause students with autism to need more time in a special education setting in order for their academic, behavioral, communicative, and sensory needs to be met appropriately (NPDC on ASD, 2008).

The requirement of procedural due process dates back to the creation of the law in 1975. As with all students with special needs, students with autism and their educational needs are protected by procedural rights. Procedural rights allow the questioning of any aspect of a child's educational experience. The student has the right to due process if any concerns or problems arise concerning the student's education. Parent participation is encouraged by the law in that fact that it proffers parents the right to fully participate in the educational process for their student with autism.

The final building block of the Individuals with Disabilities Education Improvement Act is the child's right to educational achievement (Weishaar et al., 2007). Students with autism must be provided the opportunity to learn and be successful in the educational setting and this is addressed through development of the individual education program. It is also addressed with the provision of a free and appropriate public education. Ultimately the IDEIA accomplished three main goals – most students with special needs educated in regular classrooms with nondisabled peers, graduation and employment rates increased for students serviced under IDEA, and postsecondary enrollments of students with special needs increased (Latham, Latham, & Mandlawitz, 2008).

While federal laws and regulations provide the requirement of services, each state

has an individualized policy explaining the provision of services for students with autism. No studied that addressed Part B services (ages six through 21) was available. However, Stahmer and Mandell in a 2007 study examined states' Part C (ages three through five) policies for providing intervention for students with autism. Researchers asked the questions: What are states' policies for providing early intervention services to students with autism as governed by the Individuals with Disabilities Act Part C? Are state Part C policies associated with the number of students with autism serviced under IDEA? (p. 1). Even though only Part C was examined in this research, unearthing this information provided the field of school-based autism services with evidence of the variability in states' provision of services due to state-level policies. Semi-structured interviews with Part C representatives were conducted to determine the eligibility requirements to receive autism services and the types of available services for students with autism. Respondents maintained titles such as program coordinator, Part C program specialist, supervisor, etc. and were contacted via telephone for a 25 minute interview. Of the 51 agencies contacted, 46 agreed to participate. It was found that states used different agencies to manage Pact C policies – Department of Health and Human Services, Department of Education, and Department of Mental Health. Researchers also found that there was great variability in the types of professionals permitted to diagnose a child with autism; some states required a licensed healthcare professional (39%), while others (15%) accepted diagnoses from multidisciplinary teams. To make an autism diagnosis, no state required the use of a specific diagnostic tool. States even had variability concerning the diagnosis code that a child needed to qualify for services and only 35% of respondents provided a specific autism treatment program (p. 5).

Results of Stahmer and Mandell's research (2007) indicated that there were no statistically significant associations between state policy and service provision and the proportion of children aged three to five receiving autism services. The researchers concluded that there was variability among state practices and policies for students with autism and a lack of clear policies and practices, which can impact the quality of services provided. The discrepancies in the requirements and credentials for diagnosticians can cause students to be misdiagnosed. Limitations of the study included the small sample size and use of a non-validated survey instrument; survey responses were also not verified for accuracy. Answers may have been biased once respondents learned the study was comparing the practices of all states. Finally, this study only examined the Part C policies and provisions for students with autism in the schools, which only covers children aged three to five. As concluded by Stahmer and Mandell (2007), this study provided a general overview of policy and service provision – not a detailed picture. Though IDEA specifies that states must provide services for students with autism, the results of this study indicate the great variability among interpretations of the IDEA guidelines. Inconsistencies in interpretation of the law subsequently may cause discrepancies in how states provide preschool autism services and what constitutes appropriate and acceptable services.

The guidance provided to the states by IDEIA requires school-based autism programs to allow all students access to the general education curriculum and implement an individualized education plan. Autism programs are also required to provide professional development programs for special education teachers to assist with increasing expertise in autism spectrum disorders. While guidance from IDEA exists,

there are other agencies that serve to assist state and local educational agencies with developing appropriate programs for serving students with ASD.

Recommended Program Components of School-Based Autism Services

National Recommendations

According to Autism Speaks, in 2007 approximately $160 million was spent on researching a cure for autism and $20 million was devoted to development and dissemination research (Autism Speaks, 2010). Development research includes investigating services that have proved to be most beneficial for students with autism. Services must align with both national and state policies, regulations, procedures, and laws. The guidance provided by IDEIA requires school-based autism programs to allow all students access to the general education curriculum; schools must also implement an individualized education plan and provide professional development programs for special education teachers to assist with increasing expertise in autism spectrum disorders. While law requires that these components be included in the education of students with autism, research continues to explore what constitutes best practice in the school setting that will serve to meet IDEIA requirements and student needs.

Understanding autism spectrum disorders is important in the educational setting because it provides the basis for developing individualized instructional plans. Educational personnel must first understand autism disorders before attempting to implement effective interventions. By considering all areas of development, school-based service providers and teachers can address all areas of concerns relative to the student. In the school setting students should be taught to generalize skills to a variety of situations that are likely to occur in real-life. Best practice also includes an intense focus

on the promotion of independence to provide students with the skills needed to function in the workplace, the community, and society in general. By partnering with families to provide family-centered care, school districts can increase the likelihood that these skills will also be addressed in the home. As discussed by the NPDC on ASD (2008), families play an important role in treatment of students with autism and may need training from educational professionals to assist with carryover of skills. While working with families, school systems must also consider the varying cultural views of autism spectrum disorders. Schools are guided to learn the culture of families of students with autism and to respect their beliefs and attitudes (NPDC on ASD, 2008).

While collaboration with parents is important, equally important is the collaboration of interdisciplinary team members. Autism impacts almost all areas of development requiring several service providers as part of the team. A collaborative approach fosters effective assessment and intervention (NPDC on ASD, 2008). School systems employ special education and regular education teachers as well as other service practitioners including, but not limited to, speech language pathologists, occupational therapists, physical therapists, and behavioral therapists to provide guidance for working with a student with an autism spectrum disorder. In order to implement best practices, team members are advised to meet regularly to discuss the child's progress for appropriate intervention planning as well as incorporating the important role that families play in service provision of evidence-based practices. The use of evidence-based practices requires school districts to only provide those interventions that scientifically-based research has proven to be effective. These practices are those proven to be effective in randomized or quasi-experimental, single-subject, or mixed methodological

studies (NPDC on ASD, 2008).

While implementing evidence-based practices, educationally-based autism programs are also advised to use data from interventions to guide the individualized instruction of the student. Assessment information and data are used by school systems to develop and update goals, intervention types, and intervention frequency. Best practice is described as the consistent and continual evaluation of interventions to assist schools with modification of the student's individualized education plan (NPDC on ASD, 2008). Frequent monitoring of the student's abilities and goals can ensure that services are provided in the least restrictive environment. As required by IDEIA, least restrictive environment is defined as "To the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities, are educated with children who are not disabled, and special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only when the nature or severity of the disability of a child is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily" (20 U.S.C. 1412 § (a)(5)(A)). Schools are required to review the student's placement annually or as deemed necessary by the IEP committee. Students with autism benefit from being served in the least restrictive environment because social skills, communication skills, and the opportunity to interact with non-disabled peers are promoted. The access to the general education curriculum is another best practice recommended by the NPDC on ASD (2008). Yet another important component, transition, is recommended by the NPDC on ASD (2008) to ensure that students with autism are provided with the opportunity to successfully shift from setting to setting,

activity to activity.

In order to successfully implement the best practices suggested by the NPDC on ASD, school districts must utilize a systems-based approach. This involvement of service providers, district, local, state, and national agencies and administrators, and families in the implementation of evidence-based practices enhance collaboration and support for students with autism. Recommendations concerning best practices foster understanding of autism spectrum disorders, proper implementation of the law, and successful interventions (NPDC on ASD, 2008).

Current Research

Effective autism programs utilize recommendations from the NPDC on ASD to form the foundation for providing services to students with autism. Hurth et al. (1999) conducted a study to examine, identify, describe, validate, and define the aspects of comprehensive autism programs that are considered to be most important. The central research question sought to identify the areas autism programs that emerged as consistently important to various stakeholders across the nation. The study provided evidence that demonstrated national commonalities among effective educational programs, which can help school districts both meet the requirements set forth by IDEIA and provide services that are considered most important/appropriate. Hurth et al. employed a qualitative approach by administering surveys and conducting panel interviews with representatives from nationally known educational programs for students with autism. Seven programs were selected based on evidence of effectiveness as identified in peer-reviewed journals or by completion of a national validation process. Program representatives identified core elements of autism programs then selected those

elements considered to be of importance. The elements were then examined across all programs and labeled as "areas of agreement" – program aspects deemed to be essential to all autism programs.

Parent representatives, state and local consultants, and other expert researchers/clinicians in the field of autism refined the agreement areas and Hurth et al. (1999) identified 25 more model developers/program representatives. Using this larger group of respondents, researchers examined the consistency of the agreement areas by having program representatives identify core elements in the programs. From this three step process (panel interviews and two rounds of programs submitting core elements), six core elements of educationally-based autism programs emerged: earliest possible start to intervention, individualization of program/services for children and families, systematic teaching, specialized curriculum, intensity of engagement, and family involvement. Each of these areas was considered to be an essential element to implementation of an educationally-based autism program.

In the 1999 study by Hurth et al., some important core elements of program practice were not included in the study because the elements were not part of all programs; this was a limitation. The study also did not examine the effectiveness of these core program elements in the outcomes of students enrolled in educationally-based autism programs. While it is assumed that these agreement areas are essential to the success of students with autism, the study did not explore this hypothesis. The authors concluded that more research needed to be conducted to evaluate the quality and effectiveness of agreement areas within educationally-based autism programs. There is also the need to examine administrative factors such as personnel development. The

results of this study showed that there are clearly important core elements for educationally-based programs serving students with autism that meet the requirements set forth by IDEIA; there are also core elements that emerged as essential to autism programs but are not required by law.

As indicated in the previous study by Hurth et al. (1999), family involvement was considered one of the core elements of any autism program. The importance of family involvement and contribution demonstrated the benefit of parent perceptions of school-based autism services. Spann, Kohler, and Soenksen (2003) examined parents' levels of satisfaction with school-based services for students with autism. The researchers asked whether or not parents had negative perceptions of school-based services for their child with autism and their overall level of involvement. Quality and frequency of communication between parents and school, amount and nature of services, knowledge and involvement in the individualized education plan process, and overall satisfaction with special education services was assessed.

The parents of 45 children were selected from an autism support group assistance agency to participate in Spann et al.'s 2003 study. Telephone interviews were conducted using a 15-item questionnaire that was previously field-tested via pilot interviews with ten participants. Two interviewers conducted the interviews and scored these independently. Scores were then compared to obtain inter-rater reliability of 93%. Results showed that 73% of students spent at least part of the day in the general education classroom. IDEIA requires access to the general education curriculum (IDEIA, 2004). All students on average received a mean of 1.37 types of services with a range of 1.2-1.6 types of services across age groups (i.e. speech therapy, occupational therapy, physical

therapy). Fifty-one percent of parents reported engagement with school personnel on a daily basis and 31% reported engagement at a rate of one to three times per week. Seventy-three percent of parents reported moderate levels of satisfaction with the IEP process. Overall satisfaction of a high-level was indicated by approximately 25% of parents and 29% of parent respondents indicated low levels of satisfaction (pp. 233-234). A further analysis of subsets found a staggering 44% of respondents indicated that schools did little to meet the most extensive needs of students.

Spann et al. (2003) concluded that schools continue to struggle with obtaining an overall level of high satisfaction from parents of students with autism. This study was limited in that some important information was not obtained such as severity of the student's autism and the extent of the student's needs (which may have explained why not all students spent time in the general education classroom) (p. 235). Also, because the survey included parents of children aged 3-18, it is possible that parents of older students experienced more conflict (due to being in the school system longer), which caused them to have overall negative perceptions of school-based autism services. An additional limitation was the small sampling of parents interviewed. Furthermore, parents had a history of participating in a support group. It is possible these parents possessed more knowledge than non-support group parents on the education of students with autism and this yielded a non-representative sample.

The information obtained by Spann et al. (2003) validated findings from previous research concerning parental perceptions of school-based autism services. The study furthered the field by examining multiple dimensions of parental involvement and parental satisfaction with services. This study showed that schools continue to struggle

with the arduous task of providing school-based services to students with autism that meet the high level of expectations by parents and required by law. However, the program components perceived by parents as valuable or most needed for their child with autism might not be considered to be most important by stakeholders such as school administrators and teachers. There are many areas of concern for students with autism; therefore, schools must select program components that have been shown to be most important for use in the development and implementation of school-based autism programs/services.

Callahan, Henson, and Cowan (2004) conducted a study to determine autism program components considered most needed as rated by parents, teachers, and administrators. Prior to the Callahan et al. study, no empirical evidence was available which socially validated the core practices used in autism programs (p. 679). Research questions included: Which groups rated autism program components as most needed to establish a high-quality program? What are the meaningful differences among the ratings of parents, teachers, and administrators? Three hundred twenty-four parents, teachers of special education students, and administrators in the Southwestern United States were surveyed. Parent participants were obtained through contact with parent organizations. Respondents were asked to indicate responses on a seven point Likert scale with seven being "Absolutely Important" and one being "Not Important at All." The survey of 99 questions asked respondents which general components were considered to be important for school-based autism programs and which components were important under ideal circumstances.

The core program components surveyed by Callahan et al. (2004) were chosen

based on an extensive review of the literature in conjunction with panel discussions and reviews. Five categories were developed – Individualized Programming, Data Collection, Empirically-Demonstrated Strategies and Interventions, Active Collaboration, and Long-Term Outcomes. A response rate of 57.7% was received from 54 teachers, 95 parents, 16 administrators, and 21 others (service providers such as counselors, speech therapists, occupational therapists, behavior therapist, and physical therapists). Over 80% of the intervention items included in the survey received a score between six and seven indicating a higher level of satisfaction. Parent ratings were generally higher (indicating that a program component was very important) and administrators' rating were generally lower than other groups. Data Collection emerged as the most important program component, followed by Long-Term Outcomes, Active Collaboration, Individualized Programming, and Empirically-Demonstrated Strategies and Interventions. All categories received a score of six or above among the three groups, which indicated a high level of social validity (p. 687).

An obvious limitation was that survey respondents were not representative of the target populations (parents who chose to participate may be more involved or have more knowledge than parents who chose not to participate). The inclusion of the large number of program components should be narrowed down to focus on more effective components and more factor analyses could determine if some items should be removed from the survey (p. 691). Callahan et al.'s (2004) research provided an important contribution to social validity research in the field of autism by supplying guidelines for effective autism programs as rated by teachers, parents, and school administrators – three important stakeholders. The three groups surveyed in this study also provided consistent ratings for

specific components of autism programs considered most important.

The understanding of research concerning program elements assisted with forming the foundation for educationally-based autism programs. Best practices are used to help guide school districts in the implementation of effective programs for students with autism. Inclusion of core program elements shown to be most important and the use of best practices further support positive and effective learning experiences for students with autism in school districts.

Guidance for Kentucky School-Based Autism Services

The research on service practices for students with autism within the Kentucky educational system is limited. Most studies focused on the variety of treatments available, early intervention, or current trends and issues at the national level. Through an exhaustive search of scientific journals and the Kentucky Department of Education website, no research study was obtained which discussed the implementation or current state of services/programs for students with autism within the Commonwealth of Kentucky in the public schools. In 2006 the Kentucky Commission on Autism Spectrum Disorders released fifteen recommendations for the state to follow regarding autism services. Those recommendations for the school system included teaming with the Kentucky Department of Education (KDE) to synchronize services for students in public schools, the hiring of "qualified staff", development of training programs, and providing extended school day and school year services without having to prove child regression (Kentucky Council on Developmental Disabilities, 2008).

KDE issued the Technical Assistance Manual on Autism for Kentucky Schools in November of 1997. The manual included sixteen enhancements for supporting students

with autism: participation and engagement, time for completion, pace of instruction, size of task, instructional input, output of responses, level of difficulty, physical environment and materials, level of support, organization of information, location of learning, motivation for student performance, social interaction, behavior, alternate goals and parallel curriculum. The manual also stressed that "there are specific environment supports that should be considered and addressed for any student with autism," (KDE, 1997, p. 35). Schools are guided to provide supports in the areas of social and behavior competency, communication, physical needs, and organization of information in order for students to be successful. Though these recommendations aide in service delivery for students with autism spectrum disorders, recommendations from the state detailing required program components are nonexistent at this time.

Evaluation of Autism Programs

As reviewed in Chapter I, several states have developed assessment tools to assist school districts in the evaluation of school-based autism services and programs. Magyar (2011) discussed autism program evaluation to provide school personnel with an understanding of the needs of students with autism spectrum disorders, supplementary aides and supports, related elements of program development, the provision of services system, and the importance of continuous program evaluation (Magyar, 2011, p. 54). As indicated by Table 1, the Autism Program Quality Indicators from the University of the State of New York provides a comprehensive examination of school-based autism services by including program components supported by research.

Autism Program Quality Indicators

The Autism Program Quality Indicators (APQI) developed by the University of

the State of New York provides school districts a means to review the services/programs provided for students with autism; it is based on recommendations from the National Research Council, comprehensive scientific literature reviews, professional experience, and feedback from autism experts. New York Autism Network representatives from regional advisory groups, parents of students with autism, and school personnel reviewed the APQI (University of the State of New York, 2001). The APQI asked responders to evaluate the autism services/programs within their school or district in fourteen categories: individual education, development of the IEP, curriculum, instructional activities, instructional methods, instructional environments, review and monitoring of progress and outcomes, family involvement and support, inclusion, planning the move from one setting to another, challenging behavior, community collaboration, personnel and program evaluation (University of the State of New York, 2001). The APQI outlined the features of high-quality programs for students with autism spectrum disorders (McMahon & Cullinan, 2008). According to Magyar (2011) the Maximum Score received was 240 (range = 0=240) with the Rating Score being the total given by the program rater. The Rating Score is divided by the Maximum Score to yield an APQI Summary Score with higher scores (range = 0 to 1) indicating a program with stronger evidence for quality/service provision for students with autism (score ≥.80) (Magyar, 2011).

Individual evaluation. Research indicates that individual evaluation of students with autism should be completed by a multidisciplinary team with knowledge of autism spectrum disorders (IDEA, 2004). "These teams are critical to determine educational eligibility" (NPDC on ASD, 2008, "Diagnostic Assessment of Children", para. 2). As

established by IDEIA (2004), all children receive a nondiscriminatory evaluation prior to the consideration of placement in special education. According to the National Research Council (2001), application of this requirement for students with autism means that evaluations are conducted by those who have been appropriately trained in the assessment of autism spectrum disorders. Standardized assessments as well as observations are also included in the individual evaluation in order to obtain an inclusive picture of the student's strengths and areas of concern.

Evaluations of students with autism spectrum disorders should consist of the major areas of development including social/emotional development, cognitive abilities, language, motor abilities, adaptive skills, communication, and behavioral development (National Research Council, 2001). Multidisciplinary comprehensive evaluations also include pertinent medical history, developmental milestones, and parental report. All individuals involved with the student are to have access to the evaluation information.

Development of the individualized education plan. An individualized education plan for each student enrolled in special education is required by IDEIA (2004). Development of the IEP is completed when a student becomes eligible for special education services under the educational criteria for autism spectrum disorders. IEPs in Kentucky include a statement of the student's present levels of performance in the areas of communication, social/emotional development, academic/cognitive abilities, health, hearing, vision, and motor development, and behavior. For areas of need, the IEP must contain goals and objectives appropriate for the student. As stated in several research studies, instruction is individualized for each student (Yell et al., 2003; Freeman, 1997; National Research Council, 2001; Schwartz et al., 2004).

Supplementary aids, services, and supports as well as specially designed instructional tools are included as part of the IEP. Furthermore, the NPDC on ASD (2008) recommends that only evidence-based practices are to be used when selecting instructional tools ("Factors that Affect," para. 2). Any exclusion from the least restrictive environment must also be indicated on the student's IEP. Special factors, such as behavioral concerns, hearing abilities, vision abilities, and communication needs, and the solutions for these areas of concern are included as part of the IEP.

Curriculum. The curriculum for students with autism addresses the main developmental areas of concern for all autism spectrum disorders, such as social interaction, communication, behavior, and sensory needs (National Research Council, 2001). The curriculum is individualized and specialized (Hurth et al., 1999; Iovannone et al., 2003) according to the student's areas of concerns, strengths, age, and the way that he/she learns. The NPDC on ASD (2008) further recommends that the curriculum include play and leisure skills, self-help and adaptive skills, self-advocacy and coping skills, functional application of academic and cognitive skills, and motor skills ("Curriculum Areas," para. 2). Dawson and Osterling (1997) identified the content of the curriculum as one of the important components of any program for students with autism. As required by IDEIA (2004), students have access to the general education curriculum that is provided to same-aged peers.

Instructional activities. The instructional activities used in the delivery of the curriculum, like the individualized education plan and curriculum components, are to be individualized based on the needs of the student (Iovannone et al., 2003). Hurth et al. (1999) identified the incorporation of the child's interests into instructional activities.

The National Research Council (2001) emphasized the importance of consideration of the student's strengths as well as areas of concern when selecting activities for instruction. Intensity of engagement and systematic teaching during instructional activities are also important components of effective autism services (Hurth et al., 1999).

Instructional activities for students with autism spectrum disorders reflect the developmental level of the child and provide the opportunity for the student to participate appropriately in a variety of settings. Even slight activity modifications can help to provide a supportive environment for the student with autism. Special education teachers, general education teachers, and other service providers and support personnel are trained in various instructional activities that can be used to meet the goals on the student's individualized education plan.

Instructional methods. In a study conducted by Dymond, Gilson, and Myran (2007), parents were surveyed and asked to make recommendations concerning services for children with autism. One emerging theme was the desire for more instructional methods to teach communication to students with autism. Students with autism have varying needs; therefore a variety of instructional methods are utilized as well. According to Magyar (2011), instructional methods should focus on the core features of autism including socialization and play, language and communication, repetitive and stereotyped behavior patterns/interests, related prosocial behavior, adaptive and classroom participation, academics, and mental health (p. 30). Some instructional methods that address autism include social scripts, functional behavioral assessment, discrete trial training, applied behavior analysis, and functional communication training (Magyar, 2011, p. 30).

Instructional methods that addressed these core features were validated empirically (National Research Council, 2001; NPDC on ASD, 2008). There are currently 24 evidence-based practices that research has proven to be effective instructional methods for children with autism. These methods include antecedent-based interventions, computer-aided instruction, differential reinforcement, discrete trial training, extinction, functional behavior assessment, functional communication training, naturalistic intervention, parent-implemented interventions, peer-mediated instruction and intervention, picture exchange communication system, pivotal response training, prompting, reinforcement, response interruption/redirection, self-management, social narratives, social skills groups, speech generating devices/VOCA, structured work systems, task analysis, time delay, video modeling, and visual supports (NPDC on ASD, 2008). Selection of instructional methods is based on the needs of the student and aligned with the curriculum.

Instructional environments. Environmental supports are intended to provide students with autism with assistance in everyday functioning both in the regular classroom and special education classroom. Educational supports are aimed at reducing problem behaviors and increasing student interaction. Magyar (2011) identified important environment supports: physical space that is simplified to maximize support for learning, positive behavior supports to increase the opportunity for learning, prosocial skills, and involvement, schedules to promote self-control, and visual supports to encourage independence. Instructional environments for students with autism seek to maximize the opportunity for students to focus on both strengths and areas of concern. Environmental supports are tailored to the ability level of the student.

Review and monitoring of progress and outcomes. Arick et al. (2003) stated that intervention programs need appropriate progress monitoring in order to be determined effective or ineffective. The research results implied that parents and service providers found the progress monitoring utilized by the outcome study to be an effective way to plan interventions and maintain effective communication channels/ relationships between autism programs and parents. The outcomes from this study also determined that effective progress monitoring programs can indirectly aide in program planning- teachers obtain progress monitoring information and subsequently modify student interventions based on progress. Parents, teachers and administrators also rated data collection as one of the important components of core practices used in autism services (Callahan et al., 2004).

Constant review and monitoring of progress and outcomes provides personnel with the opportunity to determine whether or not intervention programs, methods, or activities are beneficial to the student. Program effectiveness is based on documentation of progress (Yell et al., 2003). The purpose of progress monitoring is trifold: to examine program success or failure, to identify potential or current complications and offer a solution, and to identify incompatibility between learning styles and instructional methods or activities (Magyar, 2011). Students with autism continually change over time making progress monitoring an effective and efficient way to keep pace with the students' ever-changing needs. The student's individualized education plan provides the goals and objectives to be monitored and reviewed in an ongoing manner.

Family involvement and support. Family involvement is considered to be one of the core elements of any autism program (Hurth et al., 1999). Specifically, IDEIA

mandated parental involvement in the individualized education plan process and when educational decisions are made for any student with disabilities (IDEIA, 2004). The education of students with autism is more effective when parents are involved in the educational process (Turnbull, Wilcox, & Stowe, 2002). The NPDC on ASD (2008) included family-centered support and involvement as one of the nine guiding principles for school-based autism services. Family-center practices are encouraged for any agency or school system dealing with students with autism due to the attention, services, and resources required.

Families are invited to participate in every aspect of the student's educational experience (Magyar, 2011). Families offer anecdotal information beneficial during the evaluation process and throughout the course of intervention. Though the student may spend six to seven hours per day five days a week in an educational placement, the student will ultimately spend the majority of his/her time with a parent or other caregiver. Students learn most skills through instructional activities at school and family involvement can assist in carryover of skills from the school setting to the home and community settings.

Inclusion. All students with special needs served in the educational system under IDEIA (2004) are guaranteed the right to, not only a free and appropriate public education, but also an education in the least restrictive environment. The least restrictive environment required that students access the general education classroom and curriculum for as much time as deemed appropriate with appropriate supports and accommodations. Intense sensory needs or behavioral concerns may cause students with autism to need more time in a special education setting in order for their academic,

behavioral, communicative, and sensory needs to be met appropriately.

In a study conducted by Dymond et al., (2007), parents were surveyed and asked to provide recommendations regarding services for students with autism spectrum disorders. One of the proposed suggestions that emerged as a recurring theme was the creation of appropriate school placements and educational programs (p. 143). As part of appropriate school placements, parents reported that students with autism be allowed more time for inclusion with nondisabled peers. In the least restrictive environment, the educational agency ensures that staff members and teachers are adequately trained to provide services to safeguard the behavioral, communicative, sensory, and educational needs of the student in the appropriate placement.

Planning the move from one setting to another. IDEIA (2004) provides specific guidelines for planning a move from one setting to another with students with autism spectrum disorders. IDEIA (2004) defines transition as:

> a coordinated set of activities for a child with a disability that (a) is designed to be within a results oriented process, that is focused on improving the academic and functional achievement of the child with a disability to facilitate the child's movement from school to post-school activities, including post-secondary education, vocational education, integrated employment (including support employment), continuing and adult education, adult services, independent living, or community participation; and (b) is based on the individual child's needs, taking into account the child's strengths, preferences, and interest; and includes instruction, related services, community experiences, development of employment and other post-school adult living objectives, and, if appropriate, acquisition of

daily living skills and provision of a functional vocational evaluation. (20 U.S.C. 1401 § (34))

Children with autism often have difficulties with transitions from one activity or setting to another. Transition occurs when a student begins school, transitions from preschool to kindergarten, moves from middle school to high school, or when leaving the school system to seek employment or post-secondary education or training. The NPDC on ASD (2008) advised that education agencies ensure proper transition planning for all students with autism to provide the greatest opportunity for positive outcomes. Transition planning includes family members, teachers, service providers, and the student, as appropriate and is documented on the student's individualized education plan.

Challenging behavior. Repetitive and stereotypical behaviors are one of the core characteristics of autism spectrum disorders and often present challenges to teachers ranging from simple task avoidance to self-injurious acts. Educational agencies are advised to have in place a strong positive behavior support program specifically targeted to minimize problem behaviors.

The NPDC on ASD (2008) calls these challenging behaviors "interfering behaviors" because learning and development of the child are disrupted. Functional behavior assessments are used to identify the antecedents and contexts in which problem behaviors occur. Following completion of the functional behavior assessment, IEP teams can then develop appropriate interventions that focus on replacement or extinction of problem behavior. A tiered behavioral intervention model offered by the NPDC on ASD focuses first on preventative practices, then on functional assessment-based interventions, and finally on intensive, individualized interventions (NPDC on ASD, 2008).

The National Research Council (2001) recommended that all individualized education plans address the replacement of challenging behaviors with behaviors that are more appropriate. Furthermore, the council suggested that, in order to replace these problem behaviors, practitioners and school personnel have knowledge of the situations in which the behaviors occur. Functional assessment, functional communication training, and reinforcement of alternative behaviors are all instructional strategies that are empirically based (National Research Council, 2001).

Community collaboration. IDEIA (2004) provided that all students with special needs access not only the general education curriculum, but also those community services that will allow students to be successful following graduation. Community collaboration is most often examined when transition services become a required part of the individualized education plan at age 16. As required by law, educational agencies must assist the student and/or parents with accessing various community services (IDEIA, 2004).

Personnel. IDEIA (2004) greatly impacted school districts in regards to personnel. The law stipulated that all special education teachers be highly qualified to educate students with special needs. Highly qualified is defined as a teacher who possesses at least a bachelor's degree and who holds the required state special education certification or licensure equivalent. These highly qualified special education teachers cannot be emergency certified or temporarily certified as an educator of students with special needs. Lunenberg and Ornstein (2008, p. 392) provide a summary of the requirements for special education teachers under IDEIA: New or veteran elementary school educators who teach one or more academic subjects to students with severe

cognitive needs may demonstrate knowledge of the academic subjects through a "high objective uniform State standard of evaluation" process (20 U.S.C. 1401 § (10)(D)(ii)). New or veteran middle or high school educators also teaching one or more academic subjects to students with severe cognitive needs may demonstrate knowledge of the academic subjects as deemed appropriate by the state. New educators teaching two or more academic subjects, also highly qualified in mathematics, language arts, or science have a two-year grace period to become highly qualified in other academic subjects. Veteran educators teaching two or more core academic subjects to students with special needs can demonstrate knowledge through a "high objective uniform State standard of evaluation" process (20 U.S.C. 1401 § (10)(D)(ii)). Special education teachers and those serving in a consultative role not teaching core subjects are only required to meet the standard requirements of IDEIA (bachelor's degree, state certification or licensure, not emergency or temporarily certified). Finally, other special education teachers providing instruction in core academic subjects are required to meet No Child Left Behind mandates for new elementary, middle, and high school or veteran teachers.

IDEIA (2004) also required states to ensure that all special education teachers, general education teachers, related service professionals, and paraprofessionals are trained and have knowledge of the skills needed to serve students with special needs. For school personnel involved in the education of students with autism, this means that teachers should have knowledge of the characteristics of autism spectrum disorders, evaluation procedures, individualizing instruction, supplementary aids and services, and behavior modification and management practices.

Program evaluation. As previously mentioned, the purpose of program

evaluation is to assist with program improvement (Oren & Ogletree, 2000) and to provide educational agencies with information concerning program strengths and areas of concern. The National Research Council (2001) identified ongoing program evaluation as one key essential to the education of students with autism spectrum disorders. According to the NPDC on ASD (2008), program evaluation is meant to be a constant component of school-based autism service provision.

Summary

A review of the autism services literature revealed several qualitative studies detailing important elements of autism programs as perceived by various stakeholders and through comparisons of successful autism programs. However, there is no document for the Commonwealth of Kentucky that specifically detailed the assessment of school-based autism services for students. Currently, school districts are not required to complete an autism-specific assessment tool that would yield data regarding the extent of implementation of program components.

Without this information it is difficult for state and local education agencies to determine appropriate professional development activities or provide guidance to school districts concerning remedies for autism program and/or service components that are not fully implemented with all students with autism spectrum disorders. There is a gap in the research addressing assessments of school-based autism services in Kentucky as no current data exists to address this pressing matter. Concerns for students with autism led to the central research question for this study: Based on the Autism Program Quality Indicators evaluation tool, what is the extent of program implementation for autism

services in Kentucky public schools?

CHAPTER III: METHODOLOGY

Introduction

The nine guiding principles from The National Professional Development Center on Autism Spectrum Disorders (NPDC on ASD) (2008) provided state and local educational agencies with the necessary tools to implement successful school-based autism programs and services. Are school districts following these recommendations and to what extent are the programs implemented? This descriptive evaluation study focused on the extent of program implementation as reported by administrators and school-level personnel regarding autism services within their respective districts with an assessment tool that embeds the nine guiding principles from the NPDC on ASD.

The next six sections of this chapter are devoted to the methodology associated with this research. Definitions of the Population and Sample are provided. Data collection Procedures are outlined and discussed. A Description of the Variables follows. Statistical procedures are reviewed in Research Design and Analysis. Ethical Considerations are then discussed with a brief Summary concluding the chapter.

Population and Sample

The population for this study included all autism service programs in Kentucky public schools. Selected from this population, the sample for this study included directors of special education and members of a regional autism cadre from 17 public school districts in a regional educational cooperative in Kentucky (N= 17). This sample was representative of the occurrence of autism and free/reduced lunch rate as compared to the general population of public school districts in Kentucky. See Table 1 for a comparison of demographic data among the 17 school districts regarding percent of

students with autism and percent of free/reduced lunch population.

As reported in the December 1, 2010 Report of Children and Youth with Disabilities Receiving Special Education and Related Services (Kentucky Department of Education, 2010c) required by the state department, 316 students with autism were serviced by this educational cooperative, which was approximately eight percent of the total number of students with autism ages three through 21enrolled in Kentucky public schools and approximately four percent of the total number of students ages three through 21 with disabilities in the educational cooperative. Approximately four percent (M = 3.8%, SD = 1.67) of the entire disability population was comprised of students with autism (see Table 2), which is consistent with all Kentucky districts. These numbers vary from year to year but provided an accurate snapshot of the target population and indicated that the educational cooperative selected for this study was representative of other educational cooperatives in Kentucky.

Approximately two and one half percent of school districts were independent districts, which was close to representative of the entire state's independent school district percentage of three percent. A range of socioeconomic statuses were included in the sample (see Table 2). The average free and reduced lunch population for the 17 school districts was 62% (M = 61.7, SD = 7.18), which was comparable to the state average of 56% (Kentucky Department of Education, 2010d). In summary, the sample chosen was representative of Kentucky.

In 2008, Kentucky was chosen by the NPDC on ASD to participate in an autism initiative project. Goals of the project included increasing the number of highly qualified personnel, developing an evidence-based professional development system, and

providing assistance to districts working with students with autism (Kentucky Department of Education, 2008). As a result of this initiative, a state autism team and regional autism cadres have been developed. Each regional cadre is comprised of a

Table 2

Comparison of Demographic Data for Seventeen Districts

School district	Demographic Variable		
	No. of students with disabilities	School-wide free/reduced lunch (%)	Students with autism (%)
School District A	345	57	4.4
School District B	780	57	3.2
School District C	463	55	9.1
School District D	329	59	2.7
School District E	183	73	2.7
School District F	172	71	2.3
School District G	357	58	4.8
School District H	327	59	4.0
School District I	229	66	4.8
School District J	419	64	4.1
School District K	529	51	2.5
School District L	288	73	2.1
School District M	258	70	1.2
School District N	188	70	4.8
School District O	486	55	4.3
School District P	427	60	3.0
School District Q	1,805	51	5.0
M	446	61.7	3.8
State of Kentucky	102,128	56	3.8

representative from each school district. Roles of practitioners who are members of the regional autism cadre include speech-language pathologists, school psychologists, regular education teachers, special education teachers, special education teacher consultants, principals, and directors of special education. All members of the regional autism team located in the 17 school districts of the educational cooperative were asked to participate in this research. There were 74 individuals representing districts and serving as members of the regional autism cadre. Multiple raters from each school district provided inter-rater reliability to ensure objective results.

Each school district employs one director of special education. Directors of special education were chosen as participants in this research as directors oversee implementation of school-based services for all students with special needs and 15 (N = 17) responses were received. The directors' reports of the extent of implementation of school-based autism programs and services provided an administrative perspective. A practitioner's report was obtained from the members of the regional autism cadre from each district and 41 responses were received. The practitioner's report was important because these individuals were involved with students with autism on a regular basis and had constant interaction with the school-based services provided for this population.

Participants in this study included one special education director from each school district and members of the regional autism cadre from each school district. A total of 74 surveys were distributed and 59 responses were received from the districts with a range of 1 to 10 responses from each district (M = 4). See Table 3 for responses by district and respondent. Two surveys were not completed due to the individuals retiring from the school district. Of the 59 responses, three directors responded twice and one member

from School District B responded twice. School District N did not return any surveys and the director of special education from School District J did not participate. This yielded a response rate of 76.4%.

Table 3

Response Rates by District and Respondent Role

School district	Responses received by role			
	Surveys distributed	Director of special education	Autism team members	Response rate (%)
A	4	1	3	100
B	9	1	9	100*
C	5	1**	2	60
D	4	1	2	75
E	3	1**	1	67
F	3	1	2	100
G	4	1	2	75
H	3	1	1	67
I	4	1**	2	75
J	4	0	2	50
K	6	1	5	100
L	5	1	1	40
M	2	1	0	50
N	4	0	0	0
O	6	1	4	83
P	2	1	1	100
Q	5	1	4	100
M	4.3	.9	2.4	69%

Note. *School district B had 10 responses returned implying that one respondent completed the survey twice. **These directors of special education completed the survey twice.

For those directors of special education that responded twice, surveys were reviewed for consistency in responses. Each of the three directors had consistent responses on both submissions therefore the second set of responses was used due to the fact that directors likely had more information at time they completed the surveys again.

Materials and Procedures

Approval from Western Kentucky University's Human Subjects Review Board was obtained with expedited review (see Appendix A). In order to gain a comprehensive picture of the level of service implementation of autism services/programs within the school setting, directors of special education and members of the regional autism cadre from each district were asked to complete the Autism Program Quality Indicators (APQI) evaluation tool as developed by the New York State Education Department. Written permission to use the APQI was obtained from the New York State Department of Education. Directors of special education and members of the district autism teams received an e-mail communication detailing the purpose of the research and an electronic link to the APQI evaluation tool. The electronic link included two demographic questions regarding the respondents' district of employment and job title. Completion of the assessment tool implied consent to participate in this study.

The researcher attended the monthly meeting for directors of special education in the educational cooperative area. Directors were presented information regarding the nine guiding principles from the NPDC on ASD as well as an overview of the purpose of the research. The names of regional autism cadre members by district were obtained from the regional educational cooperative office. In order to be a member of the regional autism cadre, members were required to complete an online training module that outlined

the nine guiding principles from the NPDC on ASD. The directors received this information in both paper and electronic format to establish a comparable knowledge base between directors of special education and regional autism team members of the nine guiding principles.

Following the face-to-face meeting with directors of special education, the APQI was electronically delivered to the director of special education for each school district and to members of the regional autism cadre for each district in the educational cooperative three times. The electronic communication included with the link to the evaluation tool included information concerning the purpose of the research study and informed the regional autism cadre participants that participation in the APQI implied consent (see Appendix B and Appendix C). The electronic communication to directors of special education included copies of the NPDC on ASDs' presentation and reading materials concerning the nine guiding principles. This ensured that directors unable to attend the meeting and all autism cadre members had the same information regarding the guiding principles.

Instrumentation

The Autism Program Quality Indicators (APQI) assessment tool (see Appendix D) was developed by the University of the State of New York to provide school districts a vehicle to review the services/programs provided for students with autism; it was established based on recommendations from the National Research Council, comprehensive scientific literature reviews, professional experience, and feedback from autism experts (University of the State of New York, 2001). Furthermore, New York Autism Network representatives from regional advisory groups, parents of students with

autism, and school personnel reviewed the APQI (University of the State of New York, 2001). The APQI requires responders to assess the autism services/programs within their school or district in 14 categories: individual education, development of the individual education program, curriculum, instructional activities, instructional methods, instructional environments, review and monitoring of progress and outcomes, family involvement and support, inclusion, planning the move from one setting to another, challenging behavior, community collaboration, personnel, and program evaluation.

The APQI outlines the features of high-quality programs for students with autism spectrum disorders (McMahon & Cullinan, 2008). Using a Likert scale, each indicator is given a rating of N/A, 0, 1, or 2, or 3 with N/A = "Not applicable. The program is not responsible for this area", 0 = "There is no evidence of this indicator", 1 = "There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development", 2 = "There is some evidence of this indicator **or** there is clear evidence of the indicator for only a portion of students with autism", and 3 = "This quality indicator is clearly evident for all students with autism" (University of the State of New York, 2001). The highest score possible is 240 with higher scores indicating a program with stronger evidence for quality/service provision for students with autism (Magyar, 2011). A content matrix was completed to compare the Autism Program Quality Indicators assessment tool with the nine guiding principles from the NPDC on ASD (see Appendix E). Each indicator on the APQI matched to at least one or more of the guiding principles.

Validity of the APQI was obtained through a content match between the nine guiding principles from the NPDC on ASD and the 14 indicators on the APQI. The

content match was validated through review by an expert in the field of special education and autism.

Autism Program Quality Indicators

Fourteen program quality indicators comprise the Autism Program Quality Indicators assessment tool created by the New York State Education Department. The APQI was developed based on extensive literature reviews, interviews with and input from leaders in the field of autism, parents, and members of the New York Autism Network (University of the State of New York, 2001). Each indicator is considered to be an important component of any school-based autism program. Each indicator is rated on a four-point scale with 0 indicating no evidence of implementation, 1 indicating minimal evidence of implementation, 2 indicating some evidence or clear evidence of implementation with some students with autism, and 3 indicating clear evidence of implementation with all students with autism. Each of these 14 program quality indicators are described below.

Individual evaluation. Individual Evaluation examines the assessment process utilized by school districts in regards to placing students with autism spectrum disorders in special education. Sample items include *"Evaluations include the examination of the individual skills and strengths of students with autism, as well as their needs"* and *"Evaluation reports are shared with the student (if appropriate), parents, educators, and other professionals who work collaboratively with the family."* A total of eight separate items comprise the Individual Evaluation indicator.

Development of the individual education program (IEP). Development of the Individual Education Program addresses the utilization of a variety of factors to develop

goals and objectives for the student's individualized education program. Sample items include *"The IEP identifies developmental, health, social-emotional, and behavioral needs"* and *"The IEP identifies program modifications, including environmental and instructional adaptations and accommodations, that are needed to support the student."* A total of seven separate items are part of the Development of the Individual Education Program indicator.

Curriculum. The Curriculum indicator considers the degree to which the curriculum focuses on the areas of concern for the student. Sample items include *"With respect to communication, the curriculum emphasizes the development of a functional communication system for both verbal and nonverbal students with autism"* and *"The curriculum focuses on the maintenance and generalization of learned skills to more complex environments."* A total of seven separate items comprise the Curriculum indicator.

Instructional activities. The degree to which services address a range of activities, experiences, and materials for engagement of the student with autism is the purpose of Instructional Activities. Sample items include *"IEP goals and instructional methods are compatible and complementary when the program uses components of different intervention approaches"* and *"Activities use a variety of instructional formats-one-to-one instruction, small group instruction, student-initiated interactions, teacher-directed interactions, play, peer-mediated instruction-based upon the skill to be taught and the individual needs of the student."* A total of five items address the Instructional Activities indicator.

Instructional methods. Instructional Methods consider the degree to which

methods vary based upon the individual strengths and areas of concern for the student with autism. Sample items include *"Instructional methods are adapted to the range of ages, abilities, and learning styles of students with autism"* and *"As instruction proceeds, an effort is made to teach students to cope with the distractions and disruptions that are an inevitable part of daily living."* Six items total are used to address the Instructional Methods indicator.

Instructional environments. Instructional Environments addresses whether environments are designed to maximize the strengths of the student with autism and decrease interruptions to the learning process. Sample items include *"Environments are initially simplified to help students recognize relevant information"* and *"Communication toward and with students: (a) is geared to their language abilities, (b) is clear and relevant, and (c) encourages dialogue (when appropriate), rather than being largely directive."* A total of four items comprise the Instructional Environments indicator.

Review and monitoring of progress and outcomes. Review and Monitoring of Progress and Outcomes considers the degree to which progress monitoring is addressed. Sample items include *"The program provides regular and ongoing assessment of each student's progress on his/her specific IEP goals and objectives"* and *"Students are assessed and the instructional program is refined when: (a) target objectives have been achieved, (b) progress is not observed after an appropriate trial period, (c) target objectives have not been achieved after an appropriate trial period, (d) there is an unexpected change in a student's behavior or health status, (e) significant changes occur in the home, school, vocational, or community setting."* Four items address the Review and Monitoring of Progress and Outcomes indicator.

Family involvement and support. The educational contribution of parents in regards to the student's individual education program is addressed through Family Involvement and Support. Sample items include *"Parents are informed about the range of educational and service options"* and *"Parents are provided with opportunity to meet regularly with other parents and professionals in support groups."* A total of seven items comprise the Family Involvement and Support indicator on the APQI.

Inclusion. Inclusion evaluates whether students are provided with sufficient opportunities to engage with nondisabled peers. Sample items include *"The program offers opportunities for interaction with nondisabled peers in both informal and planned interactions"* and *"Training and ongoing support are provided to the general education teachers and staff."* The Inclusion indicator is addressed by a total of four items.

Planning the move from one setting to another. Planning the Move from One Setting to Another is also known as transition planning. Sample items include *"Transitional support services are provided by a special education teacher with a background in teaching students with autism"* and *"Planning integrates considerations of future placements (i.e., skills needed in the next classroom or school setting) with the student's current program."* A total of five items address Planning the Move from One Setting to Another.

Challenging behavior. Positive behavior supports is the focus of the Challenging Behavior indicator. Sample items include *"A FBA is used to direct intervention planning for persistent challenging behaviors"* and *"Environmental accommodations and adaptations are used to prevent or minimize occurrences of the problem behavior."* A total of nine items address the Challenging Behavior indicator; however, the final item

was inadvertently omitted from the electronic version of the APQI that was sent to the research sample: *"Behavior intervention plans focus on long-terms outcomes (e.g., making new friends, participating in extracurricular activities)."*

Community Collaboration. Community Collaboration measures the degree to which families are provided with the opportunity to access community services and supports. Sample items include *"The program develops links with different community agencies that provide the comprehensive services often needed by students with autism"* and *"Parents are assisted in accessing services from community agencies."* There are three items that address the Community Collaboration indicator.

Personnel. The Personnel indicator evaluates the training and knowledge-base of all personnel involved in the education of students with autism. Sample items include *"Staff participate in continuing professional development (e.g., consultation, workshops, conferences) designed to further develop their knowledge and skills"* and *"Teachers and related service providers have access to students' IEPs and are informed of their responsibilities for implementation."* This indicator consists of a total of six items.

Program Evaluation. The final indicator of Program Evaluation examines whether school districts participate in ongoing assessments of autism services. Sample items include *"The program evaluates short-term (e.g., weekly or bi-weekly), intermediate (e.g., quarterly), and long-term (e.g., yearly) changes in student progress"* and *"Information obtained from program evaluation is used for program improvement."* A total of five items comprise the Program Evaluation indicator.

Description of the Variables

This research study analyzed demographic variables such as the socioeconomic

status of the school (indicated by the school's free/reduced lunch population) and the percentage of students with autism in order to establish representativeness of the sample. The district role of the rater (director of special education or district autism team member) was also examined (see Appendix F. Finally, the 14 program quality indicators from the APQI were considered.

Demographic Variables

School percentage of free/reduced lunch. A district's free/reduced lunch population is calculated by dividing the number of students receiving free or reduced lunch by the total population in the school, thus yielding a percentage. Each school district's free/reduced lunch percentage was obtained from the online Nutrition and Health Services website operated by the Kentucky Department of Education. This variable was considered to examine the representativeness of the sample as compared to other Kentucky school districts.

Percentage of students with autism. The percentage of students with autism reflected the number of students with autism in a school district in relation to the overall disability population. The percentage of students with autism from each district was obtained from the Kentucky Department of Education website. This variable was considered to examine the representativeness of the sample as compared to other Kentucky school districts.

District Role

Directors of special education. Directors of Special Education are considered the head administrators for departments of special education in the public schools. Ernsperger (2002) identified roles and responsibilities for directors of special education

which include developing and implementing a clear vision, providing standards and guidelines, providing opportunities for teachers to collaborate, and conducting formative and summative evaluations of teachers and staff. Special education administrators are also charged with engaging in ethical practice, maintaining individual consideration, promoting equity under the law, programming that is effective and developing partnerships that are productive (Obiakor, Rotatori, & Burkhardt, 2007).

Magyar (2011) suggested administrative activities for autism spectrum disorder program development included: creating autism-specific policies and procedures, proper budget and resource management, creation of appropriate program evaluation and progress monitoring tools, providing support for school-based autism services through development of stakeholder relationships, and providing communication methods to aide in autism program organization (pp. 105-106).

Regional autism cadre members/district autism team members. Members of each district autism team were selected by each school district's director of special education to represent respective districts as part of the regional autism cadre. Individuals included a variety of backgrounds including speech language pathologists, special education teachers, general education teachers, special education teacher consultants, principals, and directors of special education. The number of members from each district varies from approximately two to nine members. Members of the cadre are trained by individuals who have been provided instruction from the Kentucky Autism Training Center. Individuals who served on the regional autism cadre were members for approximately one year and received training concerning best practices for students with autism spectrum disorders in a variety of areas including autism characteristics, data

collection, functional behavioral assessments, and communication.

Data Analysis Plan

This was a descriptive evaluation study that was exploratory in nature. The purpose was to discover the state of current school-based service/programs offered to students with autism in the Kentucky public schools. This study also sought to determine if there are program components that consistently emerged as areas of strengths or areas of weaknesses for school districts in Kentucky.

Descriptive and Inferential Statistics

Results from the electronic survey were imported into the SPSS software program for analysis. Descriptive statistics were computed for all program quality indicator variables as well as for the percentage of students with autism and each district's free/reduced lunch percentage. Analysis of variance (ANOVA) was calculated to examine consistency in responses between respondent groups for individual indicators and the APQI as a whole. Mean and standard deviation were calculated for each program quality indicator first by district and then for the educational cooperative as a whole. A composite rating score for each individual indicator was computed. A second composite score for all respondents from each individual district was computed. The program quality indicator variables are ratio level data with a rating of N/A, 0, 1, or 2, or 3 Each indicator is given a rating of N/A, 0, 1, or 2, or 3 with N/A = "Not applicable. The program is not responsible for this area", 0 = "There is no evidence of this indicator", 1 = "There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development", 2 = "There is some evidence of this indicator **or** there is clear evidence of the indicator for

only a portion of students with autism", and 3 = "This quality indicator is clearly evident for all students with autism" (University of the State of New York, 2001). The highest score possible is 240. Percentage of students with autism and free/reduced lunch population in the school district was also ratio level data with a range of 0% to 100%. Nominal level variables include the respondent's district of employment and respondent's role within the district.

APQI Algorithm

Magyar (2004) developed an algorithm for the Autism Program Quality Indicators assessment tool to assist school districts with defining areas of strengths and areas of concern. The Maximum Score for all subscales on the APQI is 240. The Rating Score for the district is the sum of all subscales as rated by the respondent. The final APQI Summary Score is a fraction ranging from 0 to 1. Summary Scores that are "≥.80 are considered to represent quality programming" (Magyar, 2011, p. 85).

CHAPTER IV: RESULTS

Introduction

This study examined the provision of school-based services for students with autism spectrum disorders in Kentucky public schools. The upsurge in the number of students with autism in public schools has caused the educational system to play an important role in evaluation and service delivery for this population (Centers for Disease Control and Prevention, 2009). An increase in pressure to fully implement high-quality services for students with autism subsequently increased demand for program evaluation (Oren & Ogletree, 2000). As required by law, school systems provide special education and/or related services to students with autism spectrum disorders in order to meet their educational needs (IDEA, 2004). However, there was no data available that evaluated the current implementation of school-based autism services in Kentucky.

The purpose of this study was to: (a) assess the current level of service implementation for students with autism spectrum disorders as rated by directors of special education and district autism team members using the Autism Program Quality Indicators evaluation tool, and (b) to identify strengths and weaknesses (if any) that exist in the implementation of school-based autism services. This research is significant because it provides a representative picture of the current state of school-based autism services in Kentucky. Directors of special education and special education personnel will be able to use this information to strengthen the current implementation of autism services within their respective district and/or school. Once areas of concern are identified, districts can provide professional development activities and trainings targeted to ensure that services are fully implemented with all students with autism spectrum

disorders. Also, providing this information to stakeholders serves to help increase support for school-based autism services and this unique population of students.

Research Question 1 provided descriptive information from directors of special education and district autism team personnel concerning the level of implementation of specific program components for students with autism:

1. What is the current level of service implementation for students with autism spectrum disorders on the Autism Program Quality Indicators evaluation tool as reported by public school directors of special education and district autism team representatives in an educational region Kentucky?

Research Question 2 was designed to identify whether school districts consistently reported areas of school-based autism programs that were not implemented or only partially implemented:

2. Do strengths and weaknesses in program implementation exist that are consistent across school districts?

Findings

Scores on the APQI indicate whether or not evidence exists for the implementation of particular program components. Scores range from 0 to 3 with 0 indicating no evidence of implementation and 3 indicating evidence of implementation with all students with autism spectrum disorders.

Means and standard deviations for each indicator by respondent group are included in Table 4.

Directors of special education provided higher rating scores on 12 of the 14 indicators (86%) on the APQI. District autism team members provided higher ratings on

Community Collaboration (M = 1.91, SD = .59) and Family Involvement and Support (M = 2.13, SD = .38). On average, directors of special education reported higher levels of implementation than district autism members.

Table 4

Descriptive Statistics for Indicators by Respondent Group

Indicator	Respondent group	*M*	*SD*
Individual evaluation (IE)	Directors of Special Education	2.62	.63
	District Autism Team Members	2.38	.58
Development of the IEP (IEP)	Directors of Special Education	2.51	.32
	District Autism Team Members	2.30	.32
Curriculum (CUR)	Directors of Special Education	2.24	.83
	District Autism Team Members	2.23	.31
Instructional activities (IA)	Directors of Special Education	2.57	.49
	District Autism Team Members	2.42	.31
Instructional Methods (IM)	Directors of Special Education	2.51	.54
	District Autism Team Members	2.27	.42
Instructional Environments (IEV)	Directors of Special Education	2.58	.46
	District Autism Team Members	2.25	.46
Progress Monitoring (PM)	Directors of Special Education	2.51	.44
	District Autism Team Members	2.33	.42
Family Involvement and Support (FIS)	Directors of Special Education	2.04	.44
	District Autism Team Members	2.13	.38
Inclusion (IN)	Directors of Special Education	2.50	.57
	District Autism Team Members	2.26	.31

Transition (TR)	Directors of Special Education	2.55	.42
	District Autism Team Members	2.42	.37
Challenging Behavior (BEH)	Directors of Special Education	2.55	.45
	District Autism Team Members	2.43	.44
Community Collaboration (COL)	Directors of Special Education	1.67	.76
	District Autism Team Members	1.91	.59
Personnel (PER)	Directors of Special Education	2.54	.45
	District Autism Team Members	2.29	.37
Program Evaluation (PE)	Directors of Special Education	2.44	.56
	District Autism Team Members	2.10	.37
APQI Total	Directors of Special Education	2.42	.35
	District Autism Team Members	2.27	.31

Table 5

ANOVA Results of Mean Rating Comparison between Respondent Groups

		Sum of Squares	*df*	Mean Square	*F*	Sig.
Individual evaluation (IE)	Between Groups	.507	1	.507	1.381	.249
	Within Groups	11.374	31	.367		
	Total	11.881	32			
Development of the IEP (IEP)	Between Groups	.353	1	.353	3.503	.071
	Within Groups	3.126	31	.101		
	Total	3.480	32			
Curriculum (CUR)	Between Groups	.000	1	.000	.000	.984
	Within Groups	12.481	31	.403		
	Total	12.481	32			
Instructional activities (IA)	Between Groups	.188	1	.188	1.103	.302
	Within Groups	5.295	31	.171		
	Total	5.483	32			
Instructional	Between Groups	.460	1	.460	1.924	.175

methods (IM)	Within Groups	7.406	31	.239		
	Total	7.865	32			
Instructional environments (IEV)	Between Groups	.900	1	.900	4.291	.047
	Within Groups	6.501	31	.210		
	Total	7.401	32			
Review and monitoring of progress (PRO)	Between Groups	.281	1	.281	1.538	.224
	Within Groups	5.672	31	.183		
	Total	5.953	32			
Family involvement and support (FI)	Between Groups	.063	1	.063	.371	.547
	Within Groups	5.288	31	.171		
	Total	5.351	32			
Inclusion (IN)	Between Groups	.491	1	.491	2.277	.141
	Within Groups	6.684	31	.216		
	Total	7.175	32			
Transition (TR)	Between Groups	.149	1	.149	.960	.335
	Within Groups	4.813	31	.155		
	Total	4.962	32			
Challenging behavior (BEH)	Between Groups	.115	1	.115	.577	.453
	Within Groups	6.164	31	.199		
	Total	6.278	32			
Community collaboration (COL) Collaboration	Between Groups	.484	1	.484	1.027	.319
	Within Groups	14.607	31	.471		
	Total	15.091	32			
Personnel (PER)	Between Groups	.504	1	.504	3.008	.093
	Within Groups	5.197	31	.168		
	Total	5.701	32			
Program evaluation (PE)	Between Groups	.950	1	.950	4.162	.050
	Within Groups	7.078	31	.228		
	Total	8.029	32			
AQQI Total	Between Groups	.188	1	.188	1.691	.203
	Within Groups	3.450	31	.111		
	Total	3.638	32			

ANOVA was used to examine the mean rating difference between the two respondent groups (directors of special education and members of the district autism

team) on each of the 14 indicators on the APQI. ANOVA results revealed significant differences between respondent groups on one of the 14 indicators-Instructional Environments, $F(1, 31) = 4.29$, $p = .047$. ANOVA analysis was further completed between groups on the four items that comprise the Instructional Environments indicator.

Significant differences (See Table F1) existed in Item One, *"Environments are initially simplified to help students recognize relevant information,"* $F(1, 31) = 7.30$, $p = .011$, and Item Three, *"Environmental supports (e.g. the use of visual schedules) are available that facilitate the student's ability to: a) predict events and activities, b) anticipate change, c) understand expectations,"* $F(1, 31) = 4.28$, $p = .047$.

The difference between respondent groups on Program Evaluation approached marginal significance, $F(1, 31) = 4.16$, $p = .05$. Significant differences (See Table F2) were present in two Program Evaluation Items: Item One, *"The Program incorporates evaluation systems that assess program-wide effectiveness in the areas of: a) students' progress toward mastery of IEP goals, b) student performance on State and district wide tests (including, as appropriate, student performance on the State Alternate Assessment), c) students' generalization of skills, d) student progress toward long-term outcomes,"* $F(1, 31) = 6.50$, $p = .016$, and Item Five, *"Information obtained from program evaluation is used for program improvement,"* $F(1, 31) = 5.19$, $p = .030$.

Descriptive statistics by district were computed to compare respondent groups. Neither comparisons of means nor standard deviations could be calculated for School District J and School District M because only one respondent group participated in completion of the electronic survey (district autism team members and director of special education, respectively). Both respondent groups from School District F displayed

similar overall means less than two (*M* = 1.96, 1.68, *SD* = .20). Both respondent groups from School District H also reported similar means less than two (*M* = 1.90, 1.87, *SD* = .02). Respondents from three districts displayed inconsistencies between raters: School District D (*SD* = .44) and School District G (*SD* = .57) with School District L with the

Table 6

Comparison of Means for APQI between Respondent Groups

		Respondent Group		
District	No. of Responses	Director of Special Education (*M*)	Autism Cadre Members (*M*)	*SD*
A	4	2.54	2.26	.20
B	10	2.48	2.34	.10
C	3	2.78	2.82	**.03**
D	3	2.77	2.15	**.44**
E	2	2.61	2.29	.23
F	3	**1.96**	**1.68**	.20
G	**3**	**1.58**	2.38	**.57**
H	2	**1.90**	**1.87**	**.02**
I	3	2.16	**1.98**	.11
J	2	-	2.65	-
K	6	2.11	2.40	.21
L	2	2.73	**1.75**	**.70**
M	1	2.68	-	-
O	5	2.56	2.44	**.08**
P	2	2.55	2.45	**.07**
Q	5	2.61	2.47	.10
Total	56	2.41	2.32	.06

Note. School District N is excluded from this table because no responses were received from the district.

most variability between respondent groups (*SD* = .70). Those school districts with the least variability between respondent groups included School Districts C, H, P, and O with School District H yielding the least variability (*SD* = .02). The educational cooperative as a whole showed little variability between respondent groups (*SD* = .06), which indicated consistency in ratings.

Table 7

Comparison of Means for Indicators by District

		Indicator						
School District	No. of Responses	IE	IEP	CUR	IA	IM	IEV	PRO
A	4	2.69	2.24	2.40	2.23	2.32	2.44	2.50
B	10	2.83	2.49	2.19	2.60	2.72	2.67	2.33
C	3	2.00	2.82	**2.96**	**3.00**	**2.95**	2.88	2.88
D	3	2.19	2.39	2.57	2.70	2.67	2.63	2.50
E	2	2.88	2.64	2.64	2.80	2.58	2.38	2.88
F	3	2.00	2.25	2.07	2.25	**1.54**	**1.63**	2.19
G	**3**	**1.47**	2.00	2.00	2.10	2.13	**1.94**	2.19
H	2	2.63	2.00	**1.14**	2.00	**1.83**	2.00	**1.63**
I	3	2.34	2.11	2.14	2.20	**1.96**	**1.94**	**1.88**
J	2	**2.94**	2.64	2.64	2.60	2.58	2.50	2.75
K	6	2.51	2.34	**1.97**	2.36	2.23	2.25	2.43
L	2	2.19	2.07	2.36	2.50	2.33	2.50	2.13
M	1	3.00	2.57	3.00	3.00	3.00	3.00	3.00
O	5	2.86	2.57	2.04	2.13	2.10	2.59	2.38
P	2	2.81	2.57	**1.29**	**2.90**	2.83	**3.00**	2.88
Q	5	2.77	2.70	2.57	2.78	2.71	2.53	2.44

Note. School District N is excluded from this table because no responses were received from the district. IE = Individual evaluation; IEP = Development of the IEP; CUR = Curriculum; IA = Instructional activities; IM = Instructional methods; IEV = Instructional environments; PRO = Review and monitoring of progress and outcomes.

School District F received scores below 2 from three respondents in both Instructional Methods (M = 1.54) and Instructional Environments (M = 1.63). Indicators below 2 for School District G included Individual Evaluation (M = 1.47) and Instructional Environments (M = 1.94). A total of 2 respondents from School District H reported indicators below a score of 2 as Curriculum (M = 1.14), Instructional Methods (M = 1.83), and Review and Monitoring of Progress and Outcomes (M = 1.63). School District I also had three areas on Indicators 1-7 that fell below the score of 2: Instructional Methods (M = 1.96), Instructional Environments (M = 1.94), and Review and Monitoring of Progress and Outcomes (M = 1.88). School Districts K and P each only had one area that received scores below 2: Curriculum (M = 1.97) and Instructional Environments (M = 1.29), respectively.

School District C received scores near or of 3 in three areas, including Curriculum (M = 2.96), Instructional Activities (M = 3.00), and Instructional Methods (M = 2.95). Respondents from School District J gave higher ratings to Individual Evaluation (M = 2.94). The two respondents from School District P rated Instructional Activities (M = 2.90) and Instructional Environments (M = 3.00) as near or of 3. School District M received ratings of 3 on 6 out of 7 of the first indicators but it is important to note that only one response was received from this district.

A comparison of the means for indicators by districts revealed areas of concern were not consistently distributed across school districts. Lower rating scores for indicators by district were disseminated throughout the educational cooperative.

On Indicators 8-14, School District F scored below 2 in all of the indicators with the lowest score received in Community Collaboration (M = 1.00). School Districts A,

B, G, H, I, and L all received scores less than 2 in Family Involvement and Support. School District A also scored less than 2 in Personnel (M = 1.68). Community Collaboration received scores less than 2 from respondents in School Districts B, H, I, K, M, and P.

School District G scored less than 2 in three other indicators: Inclusion (M = 1.75), Challenging Behavior (M = 1.97), and Program Evaluation (M = 1.80). Lower scores were yielded for School District H in Inclusion (M = 1.88) and Planning the Move from One Setting to Another (M = 1.90). School District L received a score of M = 1.75 in the Personnel indicator. School Districts I, K, and P received scores less than 2 in Program Evaluation.

School District C received scores of 2.90 or above on three indicators: Planning the Move from One Setting to Another (M = 2.95), Challenging Behavior (M = 2.94), and Personnel (M = 2.92). School District M received the highest score of 3.00 in Program Evaluation, with only one respondent from this district.

Quality ratings were calculated for each district utilizing Magyar's (2011) Autism Program Quality Indicators Algorithm (See Table 8). According to Magyar (2011) the Maximum Score received on the APQI is 240 with the Rating Score being the total score as given by the program rater. The Rating Score is divided by the Maximum Score to yield an APQI Summary Score with higher scores (range = 0 to 1) indicating a program with stronger evidence for quality service provision for students with autism (score ≥.80) (Magyar, 2011). A total of nine items address the Challenging Behavior indicator; however, the final item was inadvertently omitted from the electronic version of the

APQI that was sent to the research sample; therefore, the Maximum Score

possible was 237. Responses of N/A lowered the Maximum Score possible for some respondents (n = 39).

Table 7 cont.

Comparison of Indicator Means for Indicators by District

		Indicator						
School District	No. of Responses	FIS	IN	TR	BEH	COL	PER	PE
A	4	**1.98**	1.91	2.28	2.67	2.00	**1.68**	2.25
B	10	**1.76**	2.58	2.70	2.84	**1.07**	2.69	2.23
C	3	2.86	2.88	**2.95**	**2.94**	2.58	**2.92**	2.60
D	3	2.18	2.56	2.55	2.56	2.08	2.58	2.25
E	2	2.21	2.25	2.00	2.43	2.00	2.25	2.40
F	3	**1.75**	**1.69**	**1.95**	**1.69**	**1.00**	**1.58**	**1.90**
G	**3**	**1.79**	**1.75**	2.30	**1.97**	2.08	2.25	**1.80**
H	2	**1.64**	**1.88**	**1.90**	2.13	**1.67**	2.25	2.20
I	3	**1.75**	2.50	2.15	2.03	**1.58**	2.38	**1.85**
J	2	2.43	2.75	2.80	2.75	2.33	2.75	2.70
K	6	2.20	2.85	2.44	2.23	**1.03**	2.81	**1.86**
L	2	**1.64**	2.50	2.80	2.44	2.00	**1.75**	2.10
M	1	2.43	2.50	2.60	2.75	**1.00**	2.67	**3.00**
O	5	2.25	2.09	2.83	2.80	2.67	2.77	2.75
P	2	2.29	2.38	3.00	2.88	**1.67**	2.67	**1.90**
Q	5	2.23	2.75	2.40	2.69	2.08	2.58	2.38

Note. School District N is excluded from this table because no responses were received from the district. FIS = Family involvement and support; IN = Inclusion; TR = Planning the move from one setting to another (Transition); BEH = Challenging behavior; COL = Community collaboration; PER = Personnel; PE = Program evaluation.

Table 8

Comparison of Quality by District Utilizing APQI Algorithm

District	No. of respondents	*M*	*SD*	Rank order
A	4	.78	.10	3
B	10	.81	.14	2
C	3	.97	.01	1
D	3	.81	.28	2
E	2	.83	.28	2
F	3	.60	.06	4
G	**3**	.71	.17	3
H	2	.65	.01	4
I	3	.69	.19	4
J	2	.90	.13	1
K	6	.79	.13	3
L	2	.74	.23	3
M	1	.94	-	1
O	5	.84	.10	2
P	2	.84	.01	2
Q	5	.84	.14	2
Educational Cooperative	56	.80	.14	2.4

Note. Rank order of 1 ($M = \geq 0.9$) indicates a program with the most evidence for quality programming. Rank order of 2 ($M = 0.8$-0.89) indicates a program with sufficient evidence for quality programming. Rank order of 3 ($M = 0.7$-0.79) indicates a program with less than sufficient evidence for quality programming. Rank order of 4 ($M = \leq 0.69$) indicates a program with the least amount of evidence for quality programming.

Overall, the educational cooperative received a Summary Score that indicates programs with stronger evidence for quality service provision for students with autism ($M = .80$. $SD = .14$). School Districts H ($M = .65$, $SD = .01$) and I ($M = .69$, $SD = .19$) received the lowest Summary Scores. School District C received the highest scores

indicating a program with the strongest evidence for quality programs (M = .97, SD = .01).

Rank order of 1 (M = ≤0.9) (indicating a program with the most evidence for quality programming) was assigned to19% of the districts (n = 3). Rank order of 2 (M = 0.8-0.89) (indicating a program with sufficient evidence for quality programming) was received by 38% of districts (n = 6). Rank order of 3 (M = 0.7-0.79) (indicating a program with less than sufficient evidence for quality programming) included 25% of districts (n = 4) and a rank order of 4 (M = ≤0.69) (indicating a program with the least amount of evidence for quality programming) was received by 19% (n = 3) of districts.

The purpose of Research Question 2 was to determine whether or not consistent strengths and weaknesses in program components existed throughout the educational cooperative. Responses were first analyzed to determine if significant differences existed between respondent groups (directors of special education and district autism team members) (See Table 5, Table 6, Table 7, and Table 8).

To determine whether strengths and/or weaknesses existed in the educational programming for students with autism spectrum disorders for the educational cooperative as a whole, descriptive statistics were computed. Table 9 presents descriptive statistics including the overall mean and standard deviation for each APQI indicator among all respondents. A total mean and standard deviation for all 14 indicators is also provided.

Throughout the educational cooperative, only one area received a mean score below two-Community Collaboration (M = 1.79, SD = .69). Family Involvement and Support was another indicator that received a lower score (M = 2.09, SD = .41) as did Curriculum (M = 2.24, SD = .62) and Program Evaluation (M = 2.27, SD = .50). Across

Table 9

Comparison of Individual Indicators among All Respondents

Indicator	*M*	*SD*
Individual evaluation	2.50	.61
Development of the IEP	2.41	.32
Curriculum	2.24	.62
Instructional activities	2.50	.41
Instructional methods	2.39	.50
Instructional environments	2.42	.48
Progress monitoring	2.42	.43
Family involvement and support	2.09	.41
Inclusion	2.38	.47
Planning the move from one setting to another	2.48	.39
Challenging behavior	2.49	.44
Community collaboration	1.79	.69
Personnel	2.42	.42
Program evaluation	2.27	.50
APQI Total	2.34	.34

the cooperative Individual Evaluation (*M* = 2.50, *SD* = .61), Instructional Activities (*M* = 2.50, *SD* = .41), and Challenging Behavior (*M* = 2.49, *SD* = .44) received the highest ratings. With the exception of Community Collaboration, all 14 indicators on the APQI received a mean score of at least 2 (*M*= 2.34, *SD* = .34). A score of 2 indicates that there is some evidence of implementation or clear evidence with some students; whereas a score of 3 indicates there is clear evidence of implementation with all students with autism (University of the State of New York, 2001).

Summary

The results presented in this chapter provided quantitative information regarding the current level of service implementation for school-based autism services in a Kentucky educational cooperative. Descriptive statistics for both groups of respondents (directors of special education and district autism team members) were provided. ANOVA results displayed the consistency of responses between and within groups across the cooperative and between and within school districts. Magyar's APQI Algorithm (2011) was calculated for each district to determine if programs in the educational cooperative displayed strong evidence for quality service provision for students with autism. Evidence for examining strengths and weaknesses across the educational cooperative was also presented. The results of this study can be used by district level personnel and school level personnel to identify program strengths and program areas of concern. Upon identification of these program components, districts can then develop and/or find professional development trainings/activities to improve program components that are not fully implemented with all students with autism.

CHAPTER V: DISCUSSION

Introduction

The dramatic increase in the number of students with autism in the public schools created a need for greater attention to quality programs for educating this unique population. Several organizations including the National Professional Development Center on Autism Spectrum Disorders and the National Research Council have released recommendations and guiding principles to assist school districts with developing programs to address essential, research-based components. Several states have developed evaluation tools to provide local education agencies with a structure for self-review of the provision of school-based autism services across a variety of dimensions. Kentucky, however, has yet to develop an evaluation tool that would serve to assist school districts with self-evaluation of school-based autism programs and services.

Current research has focused on identifying program components that are crucial to the successful provision of services for students with autism. However, the current state of school-based autism services must be determined before state and local education agencies can provide trainings to specifically address program areas of concern. This study was significant because it presented a representative picture of the current state of autism services in Kentucky. Most programs emerged as having strong evidence for sufficient quality (Magyar, 2011) in the implementation of school-based autism services. Few areas consistently emerged as areas of concern for school districts; those included family involvement, collaboration with the community, and program evaluation. Results of the research are also considered to be reliable based on reports from two respondent groups-district level personnel (directors of special education) and school level personnel

(district autism team members). This study confirmed that both groups have relatively similar perceptions regarding the level of implementation of school-based autism program components.

Local education agencies can use this information to develop growth plans, which include specific areas of concern regarding the provision of services to students with autism spectrum disorders. School systems will also be able to examine those program elements that received consistently higher ratings and these elements can serve as models for improving areas of concern.

This research addressed and answered the central research question: Based on the Autism Program Quality Indicators evaluation tool, what is the extent of program implementation for autism services in Kentucky public schools? The following research questions provided the framework for the study:

1. What is the current level of service implementation for students with autism spectrum disorders on the Autism Program Quality Indicators evaluation tool as reported by public school directors of special education and district autism team representatives in an educational region in Kentucky?
2. Do strengths and weaknesses in program implementation exist that are consistent across school districts?

Discussion of Findings

The results of this study were mainly descriptive in nature and a quantitative approach was used in computation of the data to develop a representative picture of the current level of service implementation for students with autism spectrum disorders in Kentucky public schools. Results were examined from the district level, as an

educational cooperative, by Autism Program Quality Indicator (APQI), and on the APQI as a whole. The National Professional Development Center established nine guiding principles to direct the implementation of high-quality educationally-based supports and services for students with autism spectrum disorders. These nine principles are considered to be essential parts of any autism program: understanding autism spectrum disorders, providing family-centered practices that honor diversity, collaborating as an interdisciplinary team, using evidence based practices, using data collection to guide intervention, providing services in natural and least restrictive environments, providing access to the curriculum and community, planning for transitions, and embracing a systems approach (NPDC on ASD, 2008, "Introduction", para. 2). Each of the eighty items included on the APQI evaluation tool addressed at least one or more on these nine guiding principles. This implies that utilization of the APQI in self-review of school-based autism services/program components results in data which shows whether or not school districts meet the recommendations made by the NPCD on ASD.

Results from the study indicated that throughout the educational cooperative, school districts have school-based autism programs that are implementing and/or meeting the nine guiding principles recommended by the NPDC on ASD. The overall mean score on the APQI (M = 2.34, SD = .34) demonstrated that school districts implemented the program indicators with most or all of the students with autism spectrum disorders serviced. A further examination of the data showed that responses were consistent between respondent groups (directors of special education and district autism team members) for approximately 79% of the districts that participated and had respondents from each group (n = 14). One school district did not participate and two school districts

had responses from only one respondent group. When examined as whole, there was little deviation from the mean between respondent groups throughout the educational cooperative (*SD* = .06).

Through analysis of variance, results of the study showed one indicator with a significant difference between respondent groups, Instructional Environments and the Program Evaluation indicator approached significance. Directors of special education were found to provide higher ratings on almost all of the 14 indicators (86%). Those areas rated lower by directors included Community Collaboration and Family Involvement and Support; this may be due to the fact that district autism team members have more knowledge of the daily role that families and communities play in the education of students with autism.

This study revealed several strengths and weaknesses in regards to components of school-based autism programs. Community Collaboration, Family Involvement and Support, and Program Evaluation emerged as program components rated the lowest by respondent groups. Individual Evaluation, Instructional Activities, and Challenging Behavior emerged as program components rated the highest by respondent groups. Perhaps the most significant contribution of this research is that school-based autism programs displayed some evidence or clear evidence for some, not all, students on the 14 program areas addressed on the APQI. School-based autism services in Kentucky public schools have sufficient evidence for quality service provision, as indicated by Magyar's (2011) APQI Algorithm. Approximately 38% of districts (n = 6) received Summary Scores less than .80 (≥.80 indicates programs with strong evidence for quality programs). Utilizing the APQI Algorithm, results showed that the educational cooperative as a whole

received an overall mean score of exactly .80.

Implications for School Districts

Directors of special education and members of district autism teams completed the Autism Program Quality Indicators evaluation tool to self-assess the school-based autism programs currently implemented within their respective districts. School districts that participated in this study now have information concerning the current level of implementation of program components essential to quality programming. Since a content match between the recommendations set forth by the National Professional Development Center on Autism Spectrum Disorders and the indicators on the APQI was completed, districts will also be able to use the scores on the APQI to determine whether or not their school-based autism programs/services are meeting national recommendations.

Education is aimed to be the main intervention provided for students with autism spectrum disorders (National Research Council, 2001), which places a great amount of pressure on school districts. The variability in the manifestation of autism, the growing numbers, the cost of interventions, parental concerns and involvement, and the rigid laws governing special education provide reasoning for a school district's desire to establish and maintain high-quality, fully implemented services/programs. School districts can use the information gleaned from this study to gain support from various stakeholders such as school board members, family and caregivers, the community, and regional and state educational agencies and cooperatives. Districts with high quality scores have evidence to garner continued or increased financial, technical, and personnel support. Districts with lower quality scores can utilize results of this study to ask for assistance from

various stakeholders to improve program areas that received the lowest ratings.

Most school districts (62%) that participated in this study received a APQI Algorithm Summary Score that indicates evidence for quality programming (Magyar, 2011). However, further examination of the APQI according to the instrument's scale (0 = "There is no evidence of this indicator", 1 = "There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development", 2 = "There is some evidence of this indicator **or** there is clear evidence of the indicator for only a portion of students with autism", and 3 = "This quality indicator is clearly evident for all students with autism" (University of the State of New York, 2001) revealed that districts teetered between scores of 2 and 3. This is troublesome because districts should have fully implemented program components with *all* students with autism-not just *some,* as indicated by a score of 2 (M = 2.41).

Additionally, the results of this research is important to school districts because it proved that district level staff (directors of special education) and district autism team members (special education teachers, speech-language pathologists, school psychologists, etc.) have relatively comparable views of the current level of implementation of school-based autism services. Matched views revealed that directors of special education had accurate perceptions concerning the autism programs within their districts as did district autism team members (even in differing roles). Despite limited interaction with students with autism spectrum disorders in a classroom-type setting, directors of special education still demonstrated views of services for this population that were similar to services providers who have daily contact with students with ASD.

Finally, Program Evaluation surfaced as an indicator for which there was not clear evidence with all students with autism. Districts without evaluation instruments that assess school-based autism services are advised to examine tools such as the AQPI to assist with program planning.

Implications for Directors of Special Education

The results in this study indicate that district level personnel, specifically directors of special education, viewed school-based autism services as being closer to implementation with all students with autism spectrum disorders (M = 2.41) than school-level personnel (M = 2.32), though perceptions were relatively similar (SD = .06). Areas such as Family Involvement and Support and Community Collaboration were rated lower by Directors of Special Education. Family Involvement is an essential component of any autism program (Hurth et al., 1999) and a building block of IDEIA (Weishaar et al., 2007). Community collaboration and access to community services is also a required part of the law (IDEA, 2004). Results indicated that district autism team members reported school districts were at a higher level of service implementation for Community Collaboration and Family Involvement and Support than as reported by directors of special education.

An additional recommendation is that directors become more involved with these two program components in order to have a better understanding of the extent of implementation within their school districts. Based on the ratings by district autism team members (who are usually involved with students with ASD on a daily basis), school districts did more to meet Family Involvement and Support and Community Collaboration than as perceived by directors of special education.

Directors of special education in those districts that received less than sufficient Summary Scores on the APQI Algorithm should utilize the information to improve the implementation level of specific program components. Program improvement is the purpose of program evaluation (Oren & Ogletree, 2000) and school districts that scored consistently low across indicators should acknowledge the need for regular program evaluations in order to better services for students with autism within their districts.

Implications for Service Providers

Special education teachers, general education teachers, speech-language pathologists, school psychologists, behavior consultants, physical therapists, occupational therapists etc. are the main source of intervention for students. Service providers are called to provide specific and individualized instruction for each child (Yell et al., 2003; Freeman, 1997; National Research Council, 2001; Schwartz et al., 2004). The involvement and knowledge of decision-making personnel (such as directors of special education) is important because it channels the amount of support given to service providers.

The data collected in the study demonstrated that directors and service providers have a comparable view of the implementation of school-based autism program components. Service providers (armed with information concerning program weaknesses and program strengths within their district) should develop ideas for program improvement (professional development, trainings, community involvement activities, etc.) and maintenance that will have a direct impact on the quality of services they provide to students with autism spectrum disorders. Due to the fact that Program Evaluation was one of three weaknesses across the educational cooperative, service

providers should partner with district level personnel in developing an assessment tool that will yield ongoing data concerning the current level of implementation of school-based autism services/programs.

Conclusions

The purpose of this study was to answer two questions. First: What is the current level of service implementation for students with autism spectrum disorders on the Autism Program Quality Indicators evaluation tool as reported by public school directors of special education and district autism team representatives in an educational region in Kentucky? Descriptive and inferential statistics supported the notion that responses were mostly consistent across districts and between directors of special education and district autism team members and the study yielded reliable results, though directors of special education often provided slightly higher ratings. It can be deduced that, although directors of special education do not have daily contact with students, they are still very aware of the extent of service implementation in the schools with students with autism.

In regards to the level of service implementation, school districts within the educational cooperative had some evidence for or clear evidence with *some* students on approximately 93% of the indicators on the APQI. Utilizing the APQI Algorithm (Magyar, 2011), results showed that four of the 16 districts that participated did not meet the standards for having strong evidence for quality programming. However, the overall APQI Algorithm Summary Score for the educational cooperative was .80. Summary Scores that are "≥.80 are considered to represent quality programming" (Magyar, 2011, p. 85). Therefore, in utilizing the APQI Algorithm, as a whole, school-based autism programs were found to have sufficient evidence for quality programming.

Second, this research provided evidence for the question: Do strengths and weaknesses in program implementation exist that are consistent across school districts? Consistent areas of concern for school districts included four indicators. Community Collaboration was the only indicator for which the score indicated minimal evidence but clear evidence of planned implementation (M = 1.79). Fifty-percent of districts had APQI scores below 2 on Family Involvement and Support. On both Community Collaboration and Family Involvement and Support, district autism team members provided higher ratings than directors of special education. This was an expected result as district autism team members (usually service providers) have more involvement with community and family at the school-level than directors of special education would have at the district-level. Curriculum and Program Evaluation also emerged as weaker areas across school districts, though overall mean scores were between 2 and 3 (M = 2.24; M = 2.27, respectively). Weaknesses in program evaluation continued to support the recommendation that school districts must develop a consistent, effective means for evaluation school-based autism services to determine areas of strengths and areas of concern in program implementation.

Across the cooperative Individual Evaluation (M = 2.50, SD = .61), Instructional Activities (M = 2.50, SD = .41), and Challenging Behavior (M = 2.49, SD = .44) received the highest ratings. It was surprising that Challenging Behavior emerged as one of the strongest areas of implementation because behavior can be one of the more difficult aspects of dealing with students with ASD (NPDC on ASD, 2008). Individual Evaluation was one of the highest rated indicators and this can be attributed to stringent rules placed on qualifying a student for special education and that school districts are held

accountable for proper evaluation, identification, and qualification of students with autism through the Kentucky Continuous Monitoring Process.

Limitations

Limitations of this study included the small sample size as only seventeen districts in an educational cooperative were included. A total of 74 surveys were administered with a response rate of 76.4%. Two districts only had one respondent group to participate, which made attempts to assess reliability impossible.

This study also did not examine whether or not students being serviced in the public schools are appropriately identified with autism but rather focused on the extent of service implementation of services available to students with this diagnosis. Another limitation was that responses were self-reports from directors of special education and district autism team members. No qualitative or other quantitative means were used to triangulate the data. Observations and interviews of the implementation of school-based autism services (completed by individuals without vested interest in the district) would have provided a more objective picture of the current level of service implementation. Bias in results was a possibility due to self-report but was minimized by the validation of reliability between respondent groups.

Recommendations for Future Research

The current research study resulted in a baseline data set depicting the current level of service implementation for school-based autism services in an educational cooperative in Kentucky. From the data, strengths and weaknesses across districts also became apparent. Information from the study can be used by local education agencies and regional educational cooperatives to assist in the development of professional

development activities and trainings to focus on areas that emerged consistently as weaknesses for school district. However, future research could be used to determine if relationships exist between demographic information and the quality of autism services. While this study utilized demographic data to establish representativeness of the sample, it did not examine relationships (if any) between school-based autism service quality and variables such as school size, socioeconomic status, or number of students with autism.

It is further recommended that future research attempt to use several methods of data collection so as to avoid reliance on self-report. Observations of classrooms, interviews with parents, and interviews with teachers and service providers would strengthen the reliability of results and provide the opportunity for triangulation of data.

Ideally, the next step would be to conduct the same study on a larger sample, such as educational cooperatives across the Commonwealth, to increase the generalizability of the findings. It would be beneficial to examine whether program strengths and weaknesses are consistent across the state or only specific to certain regions or areas. Future research focusing on the possible causes for program strengths and weaknesses would also provide beneficial information to both the state and local educational agencies.

There is a great need for the development of a program evaluation tool that would be best suited for the needs of students with autism in Kentucky's public schools. If program improvement is the true purpose of program evaluation, developing an assessment instrument is the perfect place to start. The appropriate evaluation and implementation of school-based autism services is essential to every student with an autism spectrum disorder. Growing numbers of students in the educational setting,

growing needs of students, and growing concerns for the financial costs demonstrate the growing need for full evaluation and implementation of essential program components with *all* students with ASD.

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APPENDIX

Appendix A. Institutional Review Board Approval

WKU

A LEADING AMERICAN UNIVERSITY WITH INTERNATIONAL REACH

HUMAN SUBJECTS REVIEW BOARD

In future correspondence, please refer to HS11-286, May 2, 2011

Leigh Anne Roden
c/o Dr. Wagner
Educational Leadership
WKU

Leigh Anne Roden:

Your research project, *Response to Autism: An Assessment of Services for Students with Autism in Kentucky's Public Schools*, was reviewed by the IRB and it has been determined that risks to subjects are: (1) minimized and reasonable; and that (2) research procedures are consistent with a sound research design and do not expose the subjects to unnecessary risk. Reviewers determined that: (1) benefits to subjects are considered along with the importance of the topic and that outcomes are reasonable; (2) selection of subjects is equitable; and (3) the purposes of the research and the research setting is amenable to subjects' welfare and producing desired outcomes; that indications of coercion or prejudice are absent, and that participation is clearly voluntary.

1. In addition, the IRB found that you need to orient participants as follows: (1) signed informed consent is not required; (2) Provision is made for collecting, using and storing data in a manner that protects the safety and privacy of the subjects and the confidentiality of the data. (3) Appropriate safeguards are included to protect the rights and welfare of the subjects.

   This project is therefore approved at the Expedited Review Level until October 31, 2011.

2. Please note that the institution is not responsible for any actions regarding this protocol before approval. If you expand the project at a later date to use other instruments please re-apply. Copies of your request for human subjects review, your application, and this approval, are maintained in the Office of Sponsored Programs at the above address. Please report any changes to this approved protocol to this office. A Continuing Review protocol will be sent to you in the future to determine the status of the project. Also, please use the stamped approval forms to assure participants of compliance with The Office of Human Research Protections regulations.

Sincerely,

Paul J. Mooney, M.S.T.M.
Compliance Manager
Office of Research
Western Kentucky University

INSTITUTIONAL REVIEW BOARD WKU APPROVED

IRB APPLICATION # 11-286
APPROVED 5/2/11 to 10/31/11
EXEMPT EXPEDITED FULLBOARD
DATE APPROVED 5/2/11

cc: HS file number Roden HS11-286

Appendix B. Electronic Communication to Directors of Special Education

Dear Directors of Special Education,

My name is Leigh Anne Roden and I am a student at Western Kentucky University currently completing my doctorate degree in educational leadership. My dissertation work focuses on the current state of school-based autism services in Kentucky's schools. You have been chosen to complete an online assessment tool examining autism services in your district. The information collected will allow your school district to review its autism services as compared to other school districts. Directors of Special Education and special educators will be able to see strengths and areas of concern for their districts.

The assessment will only take approximately 10-15 minutes to complete and your responses are **completely confidential.** You will be asked to indicate your district of employment so that responses can be organized by school district for consistency comparisons. **Only** the researcher, dissertation chair, and dissertation methodologist will see your individual responses. Each district will have access to its composite individual assessment score. To provide you with some background information concerning recommendations for school-based autism services, attached to this e-mail you will find a PowerPoint presentation from the National Professional Development Center on Autism Spectrum Disorders.

There are no known risks for your participation in this research study. Completion of the assessment tool implies your consent to participate. You may choose not to participate or to withdraw at any time without penalty.

If you have any questions or concerns, please contact Dr. Christopher Wagner at 270-745-4890. If you have any questions about your rights as a research subject, you may call the WKU Compliance Manager at 270-745-2129.

Thank you in advance for your participation!

Please follow the link below to complete the assessment tool:

https://wku.qualtrics.com/SE/?SID=SV_2o63lOR0iQxZGRK

Leigh Anne Roden, M.S. CCC-SLP
Educational Leadership Doctoral Student
Western Kentucky University
leighanne.roden@topper.wku.edu

Appendix C. Electronic Communication to Regional Autism Cadre Members

Dear Regional Autism Cadre Member,

My name is Leigh Anne Roden and I am a student at Western Kentucky University currently completing my doctorate degree in educational leadership. My dissertation work focuses on the current state of school-based autism services in Kentucky's schools. As a member of the regional autism cadre, I am asking you to complete an online assessment tool examining autism services in your district. The information collected will allow your school district to review its autism services as compared to other school districts. Directors of Special Education and special educators will be able to see strengths and areas of concern for their districts. If you are a director of special education and have already completed the assessment tool, please disregard this e-mail.

The assessment will only take approximately 10-15 minutes to complete and your responses are **completely confidential.** You will be asked to indicate your district of employment so that responses can be organized by school district for consistency comparisons. **Only** the researcher, dissertation chair, and dissertation methodologist will see your individual responses. Each district will have access to its composite individual assessment score.

There are no known risks for your participation in this research study. Completion of the assessment tool implies your consent to participate. You may choose not to participate or to withdraw at any time without penalty.

If you have any questions or concerns, please contact Dr. Christopher Wagner at 270-745-4890. If you have any questions about your rights as a research subject, you may call the WKU Compliance Manager at 270-745-2129.

Thank you in advance for your participation!

Please follow the link below to complete the assessment tool:

https://wku.qualtrics.com/SE/?SID=SV_2o63lOR0iQxZGRK

Sincerely,

Leigh Anne Roden, M.S. CCC-SLP
Educational Leadership Doctoral Student
Western Kentucky University
leighanne.roden@topper.wku.edu

Appendix D. Autism Program Quality Indicators Electronic Evaluation Tool

In which school district are you currently employed?

Reminder: All information is completely confidential.

**To maintain confidentiality, the school district names included in this item were omitted.*

Which of the following best describes your current role in your school district?

- Director of Special Education
- Special Education Teacher Consultant
- Principal
- Special Education Teacher
- General Education Teacher
- School Psychologist
- Speech Language Pathologist
- Other (Please Specify Below)

Because this evaluation tool was developed by the New York State Education Department, New York Learning Standards are referenced. Please consider Kentucky's Common Core Standards instead.

The Committee on Preschool Special Education (CPSE) and the Committee on Special Education (CSE) are also referenced. These are more commonly known in Kentucky as the Admissions and Release Committee.

Please provide a rating score for every statement.

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

INDIVIDUAL EVALUATION: Thorough diagnostic, developmental, and educational assessments using a comprehensive, multidisciplinary approach are used to identify students' strengths and needs.

	Score				
	N/A	0	1	2	3
Evaluations are conducted by multidisciplinary teams made up of qualified personnel who are familiar with the characteristics and response patterns of students with autism.	○	○	○	○	○
The medical and developmental history review factors specific to autism.	○	○	○	○	○
Evaluations include the examination of the individual skills and strengths of students with autism, as well as their needs.	○	○	○	○	○
Evaluations use a variety of measures and sources of information, including: a) appropriate standardized, developmental, and observational methods, b) autism-specific measures, c) parent and family input, d) review of recent progress and functional level.	○	○	○	○	○
For both verbal and nonverbal students, speech and language evaluations use standardized measures, parental report, observation, and spontaneous language samples to assess: a) receptive language, b) expressive language, c) speech production, d) communicative intent, e) pragmatics.	○	○	○	○	○
Evaluation reports integrate results from all areas in ways that lead directly to programmatic recommendations for instruction.	○	○	○	○	○
Evaluation reports are written in a meaningful, understandable manner.	○	○	○	○	○
Evaluation reports are shared with the student (if appropriate), parents, educators, and other professionals who work collaboratively with the family.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

DEVELOPMENT OF THE INDIVIDUALIZED EDUCATION PROGRAM: The Committee on Preschool Special Education (CPSE) and the Committee on Special Education (CSE) use evaluation results, parent and family concerns, and present levels of performance in developing individualized education programs (IEPs) to meet students' needs.

	Score				
	N/A	0	1	2	3
The IEP identifies developmental, health, social-emotional, and behavioral needs.	○	○	○	○	○
While the IEP addresses a broad range of developmental and educational needs, it specifically includes the areas of: a) communication, b) social interaction, c) behavior and emotional development, d) play and use of leisure time.	○	○	○	○	○
Goals and objectives: a) relate directly to the student's present level of performance and identified needs, b) reflect parental input and family concerns, c) are observable and measurable, relate to long-term outcomes, d) are selected to achieve long-term outcomes.	○	○	○	○	○
The IEP identifies program modifications, including environmental and instructional adaptations and accommodations, that are needed to support the student.	○	○	○	○	○
"Parent counseling and training" is indicated as a related service as appropriate.	○	○	○	○	○
Augmentative and alternative communication systems are considered for students with limited verbal abilities.	○	○	○	○	○
Opportunities for interaction with nondisabled peers are provided as appropriate.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

CURRICULUM: The program uses a curriculum that addresses the significant skill deficits of students with autism and relates to the New York State Learning Standards.

	Score				
	N/A	0	1	2	3
The curriculum contains a written statement of goals and philosophy from which instructional objectives, methods, and activities proceed.	○	○	○	○	○
The curriculum focuses on maximizing independent functioning in home, school, vocational, and community settings.	○	○	○	○	○
The curriculum is adapted to the different ages, abilities, and learning styles of students with autism.	○	○	○	○	○
The curriculum emphasizes the development of: a) attention to social stimuli, b) imitation skills, c) communication and language, d) social relationships, e) symbolic play, imagination, and creativity, f) self-regulation, g) skills to meet the learning standards, h) vocational skills.	○	○	○	○	○
With respect to communication, the curriculum emphasizes the development of a functional communication system for both verbal and nonverbal students with autism.	○	○	○	○	○
With respect to social relationships, the curriculum emphasizes the development of social interaction skills with adults and peers for a range of occasions and environments.	○	○	○	○	○
The curriculum focuses on the maintenance and generalization of learned skills to more complex environments.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

INSTRUCTIONAL ACTIVITIES: The program provides a variety of developmentally and functionally appropriate activities, experiences, and materials that engage students in meaningful learning.

	Score				
	N/A	0	1	2	3
Instructional activities: a) enhance response opportunities, b) are appealing and interesting, c) promote active engagement of the student, d) focus on basic skills before more complex skills, e) provide multiple opportunities for practicing skills identified on the IEP, f) are (whenever possible) embedded within ongoing and natural routines of home, school, vocational, and community settings.	○	○	○	○	○
Activities use a variety of instructional formats—one-to-one instruction, small group instruction, student-initiated interactions, teacher-directed interactions, play, peer-mediated instruction—based upon the skill to be taught and the individual needs of the student.	○	○	○	○	○
IEP goals and instructional methods are compatible and complementary when the program uses components of different intervention approaches.	○	○	○	○	○
Instructional activities are adapted to the range of ages, abilities, and learning styles of students with autism.	○	○	○	○	○
Daily instruction is provided to meet the individual communication needs of students with autism.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

INSTRUCTIONAL METHODS: Teaching methods reflect the unique needs of students with autism and are varied depending on developmental appropriateness and individual strengths and needs.

	Score				
	N/A	0	1	2	3
Instructional methods are adapted to the range of ages, abilities, and learning styles of students with autism.	○	○	○	○	○
Instructional methods reflect empirically validated practices or solid evidence that demonstrates effectiveness over time.	○	○	○	○	○
The degree of structure and intensity of teaching are geared to the functional abilities of the student.	○	○	○	○	○
Instructional methods: a) emphasize the use of naturally occurring reinforcers, b) promote high rates of successful performance, c) encourage communication and social interaction, d) encourage the spontaneous use of learned skills in different settings.	○	○	○	○	○
As instruction proceeds, an effort is made to teach students to cope with the distractions and disruptions that are an inevitable part of daily living.	○	○	○	○	○
There is a clear plan showing methods for systematically promoting the maintenance and generalization of learned skills to new and different environments.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

INSTRUCTIONAL ENVIRONMENTS: Educational environments provide a structure that builds on a student's strengths while minimizing those factors that most interfere with learning.

	Score				
	N/A	0	1	2	3
Environments are initially simplified to help students recognize relevant information.	○	○	○	○	○
When needed (particularly for younger students), classrooms have defined areas that provide clear visual boundaries for specific activities.	○	○	○	○	○
Environmental supports (e.g., the use of visual schedules) are available that facilitate the student's ability to: a) predict events and activities, b) anticipate change, c) understand expectations.	○	○	○	○	○
Communication toward and with students: a) is geared to their language abilities, b) is clear and relevant, c) encourages dialogue (when appropriate), rather than being largely directive.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

REVIEW AND MONITORING OF PROGRESS AND OUTCOMES: The program uses a collaborative, ongoing, systematic process for assessing student progress.

	Score				
	N/A	0	1	2	3
The program provides regular and ongoing assessment of each student's progress on his/her specific IEP goals and objectives.	○	○	○	○	○
Student progress is summarized and reviewed by an educational team.	○	○	○	○	○
Students are assessed and the instructional program is refined when: a) target objectives have been achieved, b) progress is not observed after an appropriate trial period, c) target objectives have not been achieved after an appropriate trial period, d) there is an unexpected change in a student's behavior or health status, e) significant changes occur in the home, school, vocational, or community setting.	○	○	○	○	○
The program routinely reports to the CPSE or CSE when there is a need to consider modifications to the IEP.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

FAMILY INVOLVEMENT AND SUPPORT: Parents are recognized and valued as full partners in the development and implementation of their children's IEPs.

	Score				
	N/A	0	1	2	3
Parents and family members are supported as active participants in all aspects of their child's ongoing evaluation and education to the extent of their interests, resources, and abilities.	○	○	○	○	○
Parents are informed about the range of educational and service options.	○	○	○	○	○
The program demonstrates an awareness and respect for the culture, language, values, and parenting styles of the families they serve.	○	○	○	○	○
The program makes available "parent counseling and training" services, which: a) provide parents with information about child development, b) assist parents to understand the needs of their child, c) foster coordination of efforts between school and home, d) support the family in behavior management, e) enable parents to acquire skills to support the implementation of their child's IEP.	○	○	○	○	○
Parents are provided with opportunities to meet regularly with other parents and professionals in support groups.	○	○	○	○	○
Parents receive regular communication from the program regarding their child's progress.	○	○	○	○	○
Parents are assisted in accessing services from other agencies (when available and as appropriate) such as respite, in-home behavior support, home health care, transportation, etc.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

INCLUSION: Opportunities for interaction with nondisabled peers are incorporated into the program.

	Score				
	N/A	0	1	2	3
The program offers opportunities for interaction with nondisabled peers in both informal and planned interactions.	○	○	○	○	○
In their contact with nondisabled peers, students are provided with instruction and support to maximize successful interactions.	○	○	○	○	○
The program provides nondisabled peers with knowledge and support (e.g., peer training) to facilitate and encourage spontaneous and meaningful interactions.	○	○	○	○	○
Training and ongoing support are provided to the general education teachers and staff.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

PLANNING THE MOVE FROM ONE SETTING TO ANOTHER: Parents and professionals work collaboratively in planning transitions from one classroom, program, or service delivery system to another.

	Score				
	N/A	0	1	2	3
All aspects of planning include the student (whenever appropriate), parents and other family members, current and receiving professionals, and other relevant individuals.	○	○	○	○	○
Transitional support services are provided by a special education teacher with a background in teaching students with autism.	○	○	○	○	○
Transition planning: a) begins while the student is in the current placement, b) provides the student and family with the opportunity to visit the new setting (i.e., meet teachers, view classrooms).	○	○	○	○	○
Planning integrates considerations of future placements (i.e., skills needed in the next classroom or school setting) with the student's current program.	○	○	○	○	○
Planning includes teacher preparation and other supports to ensure success of the student in the new classroom, school, or work site.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

CHALLENGING BEHAVIOR: Positive behavior supports, based on a functional behavioral assessment (FBA), are used to address challenging behavior.

	Score				
	N/A	0	1	2	3
The program has a school-wide behavioral system that: a) defines expectations for appropriate behavior in all instructional settings, b) uses proactive approaches to managing behavior, c) has established strategies for crisis intervention, d) provides training for staff in recommended behavioral strategies.	○	○	○	○	○
A FBA is used to direct intervention planning for persistent challenging behaviors.	○	○	○	○	○
Multiple methods (e.g., direct observations, functional analysis, rating scales, and interviews) are used in conducting the FBA.	○	○	○	○	○
The FBA identifies both immediate (e.g., request to perform a task) and more distant (e.g., poor sleeping habits) factors that increase challenging behaviors.	○	○	○	○	○
The FBA identifies one or more functions for the challenging behaviors.	○	○	○	○	○
Environmental accommodations and adaptations are used to prevent or minimize occurrences of the problem behavior.	○	○	○	○	○
Instruction in alternative, appropriate skills (e.g., communication, social, or self-regulatory skills) is routinely incorporated into behavior intervention plans.	○	○	○	○	○
Behavioral interventions are based on positive supports and strategies.	○	○	○	○	○
Click to write Statement 9	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

COMMUNITY COLLABORATION: The program links with community agencies to assist families in accessing supports and services needed by students with autism.

	Score				
	N/A	0	1	2	3
The program develops links with different community agencies that provide the comprehensive services often needed by students with autism.	○	○	○	○	○
The program assists parents in defining their child's outside-of-school needs, such as respite, in-home behavior support, home health care, transportation, etc.	○	○	○	○	○
Parents are assisted in accessing services from community agencies.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

PERSONNEL: Teachers, teacher aides and assistants, related service providers, school psychologists, administrators, and support staff are knowledgeable and skilled related to the education of students with autism.

	Score				
	N/A	0	1	2	3
Staff are knowledgeable and skilled in the areas of expertise specific to autism, including: a) characteristics of autism, b) familiarity with assessment methods, c) developing IEPs to meet the unique needs of each student, d) curriculum, environmental adaptations and accommodations, and instructional methods, e) strategies to improve communication and social interaction skills, f) classroom and individual behavior management techniques.	○	○	○	○	○
Staff participate in continuing professional development (e.g., consultation, workshops, conferences) designed to further develop their knowledge and skills.	○	○	○	○	○
Staff are available in a ratio sufficient to provide the support necessary to accomplish IEP goals.	○	○	○	○	○
Teachers and related service providers have access to students' IEPs and are informed of their responsibilities for implementation.	○	○	○	○	○
Paraprofessionals receive specific and direct instruction and supervision regarding their IEP responsibilities to the student.	○	○	○	○	○
Ongoing support and technical assistance are available to resolve concerns related to learning and behavior.	○	○	○	○	○
	N/A	0	1	2	3

Score	Description
N/A	**Not applicable. The program is not responsible for this area.**
0	**There is no evidence of this indicator.**
1	**There is minimal to no evidence of this indicator, but clear evidence exists that the program is in the process of planning for implementation and/or staff development.**
2	**There is some evidence of this indicator *or* there is clear evidence of the indicator for only a portion of students with autism.**
3	**This quality indicator is clearly evident for all students with autism.**

PROGRAM EVALUATION: Systematic examination of program implementation and impact is conducted, including the aggregation of individual student outcomes and consumer satisfaction.

	Score				
	N/A	0	1	2	3
The program incorporates evaluation systems that assess program-wide effectiveness in the areas of: a) students' progress toward mastery of IEP goals, b) student performance on State and district wide tests (including, as appropriate, student performance on the State Alternate Assessment) c) students' generalization of skills, d) student progress toward long-term outcomes.	○	○	○	○	○
The program evaluates short-term (e.g., weekly or bi-weekly), intermediate (e.g., quarterly), and long-term (e.g., yearly) changes in student progress.	○	○	○	○	○
Parents regularly receive feedback on their child's progress toward meeting IEP goals and objectives.	○	○	○	○	○
Program evaluation includes measures of consumer satisfaction with services.	○	○	○	○	○
Information obtained from program evaluation is used for program improvement.	○	○	○	○	○
	N/A	0	1	2	3

Appendix E. Content Matrix Matching APQI Indicators with National Recommendations from National Professional Development Center on Autism Spectrum Disorders

National Recommendations (NPDC on ASD, 2008)

1. Understand the disorder
2. Provide family-centered supports that honor diversity
3. Collaborate as an interdisciplinary team
4. Use evidence-based practices
5. Use data collection to guide intervention
6. Provide services in natural and least restrictive environments
7. Provide access to the curriculum and community
8. Plan for transition
9. Embrace a systems perspective

Indicator and Items	National Recommendation Addressed
INDIVIDUAL EVALUATION: Thorough diagnostic, developmental, and educational assessments using a comprehensive, multidisciplinary approach are used to identify students' strengths and needs.	1, 3, 8, 9
Evaluations are conducted by multidisciplinary teams made up of qualified personnel who are familiar with the characteristics and response patterns of students with autism.	1, 3, 9
The medical and developmental history review factors specific to autism.	1, 3, 9
Evaluations include the examination of the individual skills and strengths of students with autism, as well as their needs.	1, 3, 4, 9
Evaluations use a variety of measures and sources of information, including: a) appropriate standardized, developmental, and observational methods, b) autism-specific measures, c) parent and family input, d) review of recent progress and functional level.	1, 3, 4, 9
For both verbal and nonverbal students, speech and language evaluations use standardized measures, parental report, observation, and spontaneous language samples to assess: a) receptive language, b) expressive language, c) speech production, d) communicative intent, e) pragmatics.	1, 3, 4, 9
Evaluation reports integrate results from all areas in ways that lead directly to programmatic recommendations for instruction.	1, 3, 9
Evaluation reports are written in a meaningful, understandable manner.	1, 3, 9
Evaluation reports are shared with the student (if appropriate), parents, educators, and other professionals who work collaboratively with the family.	1, 3, 9
Summary All of the items for this indicator address the third guiding principle from the NPDC on ASD – collaborate as an	

interdisciplinary team.	
DEVELOPMENT OF THE INDIVIDUALIZED EDUCATION PROGRAM: The Committee on Preschool Special Education (CPSE) and the Committee on Special Education (CSE) use evaluation results, parent and family concerns, and present levels of performance in developing individualized education programs (IEPs) to meet students' needs.	1, 2, 3, 4, 5, 6, 7, 8, 9
The IEP identifies developmental, health, social-emotional, and behavioral needs.	1, 9
While the IEP addresses a broad range of developmental and educational needs, it specifically includes the areas of: a) communication, b) social interaction, c) behavior and emotional development, d) play and use of leisure time.	1, 4, 9
Goals and objectives: a) relate directly to the student's present level of performance and identified needs, b) reflect parental input and family concerns, c) are observable and measurable, relate to long-term outcomes, d) are selected to achieve long-term outcomes.	1, 4, 6, 7, 9
The IEP identifies program modifications, including environmental and instructional adaptations and accommodations, that are needed to support the student.	1, 4, 6, 7, 9
"Parent counseling and training" is indicated as a related service as appropriate.	1, 2, 9
Augmentative and alternative communication systems are considered for students with limited verbal abilities.	1, 4, 6, 9
Opportunities for interaction with nondisabled peers are provided as appropriate.	1, 6, 9
Summary The items for this indicator mainly address the understanding of the disorder as well as providing services in the natural and least restrictive environments and access to the curriculum and community. The use of evidence-based practices is inadvertently addressed because IEP goals and objectives must be met through the use of evidence-based practices.	
CURRICULUM: The program uses a curriculum that addresses the significant skill deficits of students with autism and relates to the New York State Learning Standards.	1, 7, 9
The curriculum contains a written statement of goals and philosophy from which instructional objectives, methods, and activities proceed.	1, 7, 9
The curriculum focuses on maximizing independent functioning in home, school, vocational, and community settings.	1, 7, 9
The curriculum is adapted to the different ages, abilities, and learning styles of students with autism.	1, 7, 9

The curriculum emphasizes the development of: a) attention to social stimuli, b) imitation skills, c) communication and language, d) social relationships, e) symbolic play, imagination, and creativity, f) self-regulation, g) skills to meet the learning standards, h) vocational skills.	1, 7, 9
With respect to communication, the curriculum emphasizes the development of a functional communication system for both verbal and nonverbal students with autism.	1, 7, 9
With respect to social relationships, the curriculum emphasizes the development of social interaction skills with adults and peers for a range of occasions and environments.	1, 7, 9
The curriculum focuses on the maintenance and generalization of learned skills to more complex environments.	1, 7, 9
Summary All of the items for this indicator address understanding the disorders and providing access to the curriculum and community. Each item focuses on the curriculum.	
INSTRUCTIONAL ACTIVITIES: The program provides a variety of developmentally and functionally appropriate activities, experiences, and materials that engage students in meaningful learning.	1, 4, 9
Instructional activities: a) enhance response opportunities, b) are appealing and interesting, c) promote active engagement of the student, d) focus on basic skills before more complex skills, e) provide multiple opportunities for practicing skills identified on the IEP, f) are (whenever possible) embedded within ongoing and natural routines of home, school, vocational, and community settings.	1, 4, 9
Activities use a variety of instructional formats—one-to-one instruction, small group instruction, student-initiated interactions, teacher-directed interactions, play, peer-mediated instruction—based upon the skill to be taught and the individual needs of the student.	1, 4, 9
IEP goals and instructional methods are compatible and complementary when the program uses components of different intervention approaches.	1, 4, 9
Instructional activities are adapted to the range of ages, abilities, and learning styles of students with autism.	1, 4, 9
Daily instruction is provided to meet the individual communication needs of students with autism.	1, 4, 9
Summary All of the items on this indicator address the understanding of the disorder and the use of evidence-based practices; when implementing evidence-based practices, service providers follow the above guidelines.	

INSTRUCTIONAL METHODS: Teaching methods reflect the unique needs of students with autism and are varied depending on developmental appropriateness and individual strengths and needs.	1, 4, 9
Instructional methods are adapted to the range of ages, abilities, and learning styles of students with autism.	1, 4, 9
Instructional methods reflect empirically validated practices or solid evidence that demonstrates effectiveness over time.	1, 4, 9
The degree of structure and intensity of teaching are geared to the functional abilities of the student.	1, 4, 9
Instructional methods: a) emphasize the use of naturally occurring reinforcers, b) promote high rates of successful performance, c) encourage communication and social interaction, d) encourage the spontaneous use of learned skills in different settings.	1, 4, 8, 9
As instruction proceeds, an effort is made to teach students to cope with the distractions and disruptions that are an inevitable part of daily living.	1, 4, 8, 9
There is a clear plan showing methods for systematically promoting the maintenance and generalization of learned skills to new and different environments.	1, 4, 8, 9
Summary All of the items on this indicator address the understanding of the disorder and the use of evidence-based practices; when implementing evidence-based practices, service providers follow the above guidelines.	
INSTRUCTIONAL ENVIRONMENTS: Educational environments provide a structure that builds on a student's strengths while minimizing those factors that most interfere with learning.	1, 4, 6, 9
Environments are initially simplified to help students recognize relevant information.	1, 4, 6, 9
When needed (particularly for younger students), classrooms have defined areas that provide clear visual boundaries for specific activities.	1, 4, 6, 9
Environmental supports (e.g., the use of visual schedules) are available that facilitate the student's ability to: a) predict events and activities, b) anticipate change, c) understand expectations.	1, 4, 6, 9
Communication toward and with students: a) is geared to their language abilities, b) is clear and relevant, c) encourages dialogue (when appropriate), rather than being largely directive.	1, 4, 6, 9
Summary All of these items address the understanding of the disorder, using evidence-based practices, and providing services to the student in natural and least restrictive environments.	

REVIEW AND MONITORING OF PROGRESS AND OUTCOMES: The program uses a collaborative, ongoing, systematic process for assessing student progress.	1, 3, 5, 9
The program provides regular and ongoing assessment of each student's progress on his/her specific IEP goals and objectives.	1, 3, 5, 9
Student progress is summarized and reviewed by an educational team.	1, 3, 5, 9
Students are assessed and the instructional program is refined when: a) target objectives have been achieved, b) progress is not observed after an appropriate trial period, c) target objectives have not been achieved after an appropriate trial period, d) there is an unexpected change in a student's behavior or health status, e) significant changes occur in the home, school, vocational, or community setting.	1, 3, 5, 9
The program routinely reports to the CPSE or CSE when there is a need to consider modifications to the IEP.	1, 3, 5, 9
Summary All items address understanding the disorder, collaborating as an interdisciplinary team to make intervention decisions, and using data collection to guide intervention.	
FAMILY INVOLVEMENT AND SUPPORT: Parents are recognized and valued as full partners in the development and implementation of their children's IEPs.	1, 2, 3, 9
Parents and family members are supported as active participants in all aspects of their child's ongoing evaluation and education to the extent of their interests, resources, and abilities.	1, 2, 3, 9
Parents are informed about the range of educational and service options.	1, 2, 9
The program demonstrates an awareness and respect for the culture, language, values, and parenting styles of the families they serve.	1, 2, 9
The program makes available "parent counseling and training" services, which: a) provide parents with information about child development, b) assist parents to understand the needs of their child, c) foster coordination of efforts between school and home, d) support the family in behavior management, e) enable parents to acquire skills to support the implementation of their child's IEP.	1, 2, 9
Parents are provided with opportunities to meet regularly with other parents and professionals in support groups.	1, 2, 3, 9
Parents receive regular communication from the program regarding their child's progress.	1, 2, 9
Parents are assisted in accessing services from other agencies (when available and as appropriate) such as respite, in-home behavior support, home health care, transportation, etc.	1, 2, 7, 9
Summary	

This indicator addresses the recommendation to provide family centered support and honoring diversity	
INCLUSION: Opportunities for interaction with nondisabled peers are incorporated into the program.	1, 6, 7, 9
The program offers opportunities for interaction with nondisabled peers in both informal and planned interactions.	1, 6, 7, 9
In their contact with nondisabled peers, students are provided with instruction and support to maximize successful interactions.	1, 6, 7, 9
The program provides nondisabled peers with knowledge and support (e.g., peer training) to facilitate and encourage spontaneous and meaningful interactions.	1, 4, 6, 7, 9
Training and ongoing support are provided to the general education teachers and staff.	1, 3, 6, 7, 9
Summary All items for this indicator address the provision of services in natural and least restrictive environments and providing access to the curriculum and community.	
PLANNING THE MOVE FROM ONE SETTING TO ANOTHER: Parents and professionals work collaboratively in planning transitions from one classroom, program, or service delivery system to another.	1, 2, 3, 8, 9
All aspects of planning include the student (whenever appropriate), parents and other family members, current and receiving professionals, and other relevant individuals.	1, 2, 3, 8, 9
Transitional support services are provided by a special education teacher with a background in teaching students with autism.	1, 8, 9
Transition planning: a) begins while the student is in the current placement, b) provides the student and family with the opportunity to visit the new setting (i.e., meet teachers, view classrooms).	1, 2, 8, 9
Planning integrates considerations of future placements (i.e., skills needed in the next classroom or school setting) with the student's current program.	1, 7, 8, 9
Planning includes teacher preparation and other supports to ensure success of the student in the new classroom, school, or work site.	1, 7, 8, 9
Summary This indicator mainly addresses the planning for transition national recommendation. Understanding of the disorder is also needed to appropriately plan for transition.	
CHALLENGING BEHAVIOR: Positive behavior supports, based on a functional behavioral assessment (FBA), are used to address challenging behavior.	1, 4, 9
The program has a school-wide behavioral system that: a) defines expectations for appropriate behavior in all instructional settings,	1, 4, 9

b) uses proactive approaches to managing behavior, c) has established strategies for crisis intervention, d) provides training for staff in recommended behavioral strategies.	
A FBA is used to direct intervention planning for persistent challenging behaviors.	1, 4, 9
Multiple methods (e.g., direct observations, functional analysis, rating scales, and interviews) are used in conducting the FBA.	1, 4, 9
The FBA identifies both immediate (e.g., request to perform a task) and more distant (e.g., poor sleeping habits) factors that increase challenging behaviors.	1, 4, 9
The FBA identifies one or more functions for the challenging behaviors.	1, 4, 9
Environmental accommodations and adaptations are used to prevent or minimize occurrences of the problem behavior.	1, 4, 9
Instruction in alternative, appropriate skills (e.g., communication, social, or self-regulatory skills) is routinely incorporated into behavior intervention plans.	1, 4, 6, 9
Behavioral interventions are based on positive supports and strategies.	1, 4, 9
Behavior intervention plans focus on long-terms outcomes (e.g., making new friends, participating in extracurricular activities).	1, 4, 9
Summary This indicator overall addresses the use of evidence-based practices as the functional behavior assessment is one of the 24 evidence-based strategies recommended by the NPDC on ASD.	
COMMUNITY COLLABORATION: The program links with community agencies to assist families in accessing supports and services needed by students with autism.	1, 7, 8, 9
The program develops links with different community agencies that provide the comprehensive services often needed by students with autism.	1, 7, 8, 9
The program assists parents in defining their child's outside-of-school needs, such as respite, in-home behavior support, home health care, transportation, etc.	1, 7, 8, 9
Parents are assisted in accessing services from community agencies.	1, 2, 7, 8, 9
Summary This indicator mainly addresses the provision of access to the community. Understanding the disorder is also addressed because the child's individual needs must be considered.	
PERSONNEL: Teachers, teacher aides and assistants, related service providers, school psychologists, administrators, and support staff are knowledgeable and skilled related to the education of students with autism.	1, 9

Staff are knowledgeable and skilled in the areas of expertise specific to autism, including: a) characteristics of autism, b) familiarity with assessment methods, c) developing IEPs to meet the unique needs of each student, d) curriculum, environmental adaptations and accommodations, and instructional methods, e) strategies to improve communication and social interaction skills, f) classroom and individual behavior management techniques.	1, 4, 9
Staff participate in continuing professional development (e.g., consultation, workshops, conferences) designed to further develop their knowledge and skills.	1, 9
Staff are available in a ratio sufficient to provide the support necessary to accomplish IEP goals.	1, 9
Teachers and related service providers have access to students' IEPs and are informed of their responsibilities for implementation.	1, 9
Paraprofessionals receive specific and direct instruction and supervision regarding their IEP responsibilities to the student.	1, 9
Ongoing support and technical assistance are available to resolve concerns related to learning and behavior.	1, 9
Summary This indicator overall addresses the understanding of autism spectrum disorders needed by those service providers working with students.	
PROGRAM EVALUATION: Systematic examination of program implementation and impact is conducted, including the aggregation of individual student outcomes and consumer satisfaction.	1, 5, 9
The program incorporates evaluation systems that assess program-wide effectiveness in the areas of: a) students' progress toward mastery of IEP goals, b) student performance on State and district wide tests (including, as appropriate, student performance on the State Alternate Assessment) c) students' generalization of skills, d) student progress toward long-term outcomes.	1, 5, 9
The program evaluates short-term (e.g., weekly or bi-weekly), intermediate (e.g., quarterly), and long-term (e.g., yearly) changes in student progress.	1, 5, 9
Parents regularly receive feedback on their child's progress toward meeting IEP goals and objectives.	1, 2, 5, 9
Program evaluation includes measures of consumer satisfaction with services.	1, 2, 5, 9
Information obtained from program evaluation is used for program improvement.	1, 5, 9
Summary This indicator mainly addresses the use of data and evaluation to guide interventions and program implementation and structure.	

Appendix F. Tables

Table F1

ANOVA Values for Significant Differences in Means among Items on Instructional Environments Indicator

		Sum of Squares	*df*	Mean Square	*F*	Sig.
IEV1	Between Groups	1.422	1	1.422	7.303	.011
	Within Groups	6.035	31	.195		
	Total	7.456	32			
IEV2	Between Groups	.463	1	.463	1.533	.225
	Within Groups	9.369	31	.302		
	Total	9.832	32			
IEV3	Between Groups	1.922	1	1.922	4.284	.047
	Within Groups	13.908	31	.449		
	Total	15.830	32			
IEV4	Between Groups	.286	1	.286	.862	.360
	Within Groups	10.294	31	.332		
	Total	10.581	32			

Note. IEV represents Indicator Six, Instructional Environments.

Table F2

ANOVA Values for Significant Differences in Means among Items on Program Evaluation Indicator

		Sum of Squares	*df*	Mean Square	*F*	Sig.
PE1	Between Groups	1.753	1	1.753	6.500	.016
	Within Groups	8.358	31	.270		
	Total	10.110	32			
PE2	Between Groups	.779	1	.779	1.729	.198
	Within Groups	13.980	31	.451		
	Total	14.759	32			
PE3	Between Groups	.365	1	.365	2.543	.121
	Within Groups	4.453	31	.144		
	Total	4.818	32			
PE4	Between Groups	.010	1	.010	.009	.924
	Within Groups	33.668	31	1.086		
	Total	33.678	32			
PE5	Between Groups	3.182	1	3.182	5.193	.030
	Within Groups	18.995	31	.613		
	Total	22.176	32			

Note. PE represents Indicator 14, Program Evaluation.